2015 BUYER'S GUIDE II: THE BIG THREE'S TRUCKS TAKE CENTER STAGE

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- **BOLT-IN ALUMINUM RADIATOR** KEEPS RAMS' TEMPS IN CHECK

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F-250 PACKS A STOUT 6.4L AND TWINS

TOUGH SKIN MAKEOVER
700HP LINE-X'D RAM

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DUAL DUTY

JANUARY 2015 VOL. 11, NO. 1

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"Works Great!" ★★★★★

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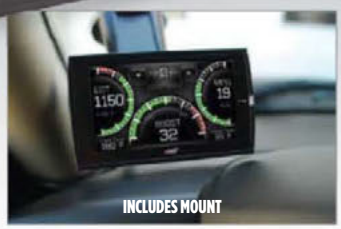

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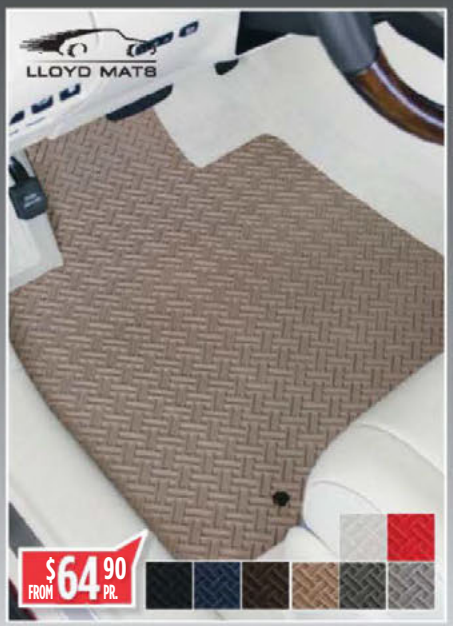

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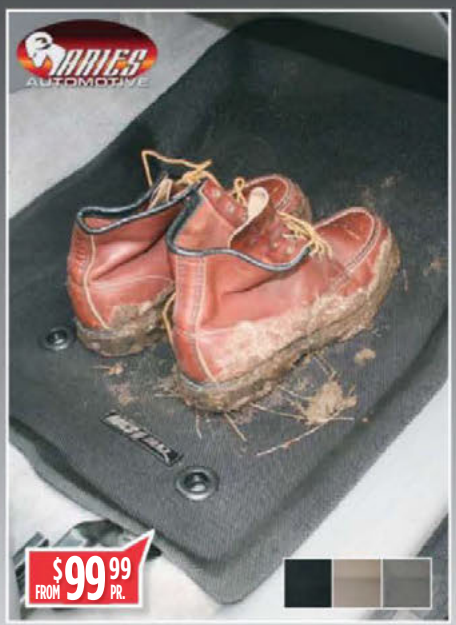
Come dirt, soda or mud, your floor boards are safe under the protective folds of Lloyd Northridge Rubber Mats. The surface is molded with a smart weave of overlapping ridges. 5-year warranty.



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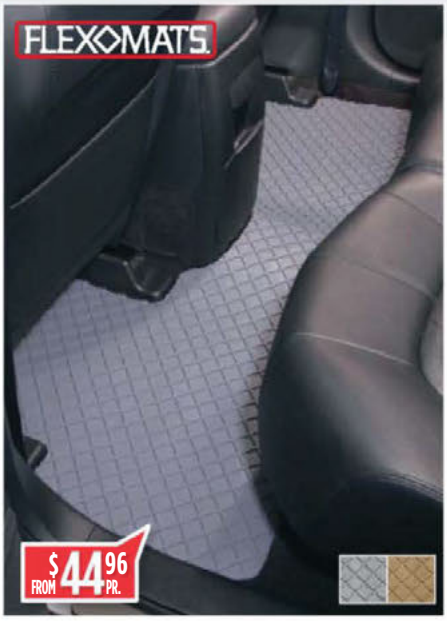

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Photo: Joe Greeves

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BY KJ JONES

PARTICULATE MATTERS

30 FOR 30

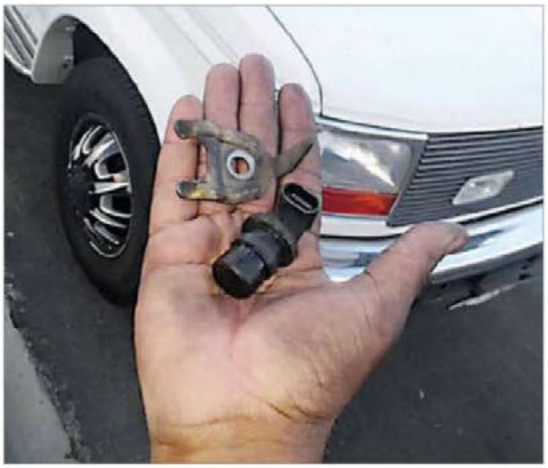
In today's times of "short money," "limited funds," "empty pockets," and just plain "being broke," nothing sucks worse than having a vehicle go down—especially for something major. For me, a critical part failure on any of my cars or Big White usually causes high anxiety for my normally calm self (for those of you just getting up to speed, Big White is my '95 Ford F-350; and no, I'm not selling it).

Does this sound crazy? Well, I believe my worry is justified somewhat, because although I possess a solid amount of mechanical aptitude, ability, and skill—as well as a "bitchin' set of tools" I've amassed over many years—I really am uptight about my rides, and being this way usually has me deferring work to professionals when something is beyond my skill level or facilities limits, and definitely past my patience threshold. Examples of this include (but are not limited to): some of the more-detailed, computer-focused operatives of today's vehicles, or replacing pieces that require a person who is part contortionist/part Zen master to access.

In early April 2014, the aforementioned fiscal deficit and an urgent need to get Big White back online after her 7.3L suddenly stopped running—and REFUSED to start again (crank/no-start ad nauseam)—forced me to go beyond performing the general maintenance tasks I have always done and take on getting to the bottom of things myself.

Having never done any deep repair on a diesel engine before, I admit I was concerned. I had no clue why the engine didn't run, and I anticipated this problem was going to open the floodgates to other engine maladies that would quickly become expensive to correct. Big White had been so good to me for so long. *Why now?!* was all I could think about the situation.

After consultation with my buddy Rick Champlin at Richard Champlin Diesel Repair in Fontana, California, I learned that with the 7.3Ls, if it isn't fuel (or lack thereof), it's the camshaft position sensor. Rick also explained, "They all do it. Once you replace that cam sensor, you'll never have the problem again." Apparently, time and the bumps and vibrations of the road cause the sensor to break up internally, which eventually leads to sudden engine shutdowns, difficult starting, and finally an inability to start at all. I confirmed the engine was getting fuel and then I went to my local Ford dealership and purchased the part for $30—a "win" as far as I was concerned, because I thought it would cost a lot more.



Imagine my alarm when I tried to start my F-350's 7.3L engine and all it did was crank. Little did I know, the camshaft position sensor—a $30 part—is arguably one of the weakest links on a Ford 7.3L. This little sensor is known for failing and, when it does, the engine can suddenly die, as if it has been shut off with the key. In some instances, a broken cam sensor can totally prevent the engine from restarting. Imagine any of these things happening while you're far away from home...or *driving*! Thankfully, Big White's sensor let go while the truck was parked right in front of my house. I handled the replacement myself and was back on the road in 30 minutes. Bring on the engine swap! I'm ready. Ha!

Once I crawled under the truck and located the sensor on the engine, I then realized removing and replacing this piece isn't as daunting as I thought it would be. The only tool required is a simple, 10mm ratchet wrench (or deep socket, 3-inch extension and ratchet) for removing and reattaching the sensor from and to the engine's front cover. The electrical side of the operation is plug-and-play simple. The entire procedure took 30 minutes.

As I installed the new sensor, I couldn't stop thinking about the money I saved (towing Big White to the dealer and paying as much as $650 for the repair) by making it a DIY project. Once I actually saw what the deal was, I also realized the procedure is *not* worth $650, in my opinion (no offense to dealerships and their technicians, of course).

While deferring to the pros is the smarter move for novice mechanics and tinkerers, I acknowledge that yes, it typically is the more expensive move. But, the costs for repairs are what they are, and we pay with trust that work is done correctly, and it's supported by a warranty.

Although I was able to get Big White back on the road myself, I won't say I'm ready to take on bigger diesel jobs yet. However, now that I've broken the ice on actually working on my truck, I just might have to start stretching and honing my contortionist moves, work on having more patience, and at least *consider* trying to correct any future problems Big White may have—before making an appointment at the dealership.

Kaje
KJones@enthusiastnetwork.com

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POSTAL ROUTE

BY KJ JONES

OUR READERS WRITE BACK!

TURBO REDUX

In a previous issue, you guys ran an article about a turbo rebuild kit for a 6.0L Power Stroke from a company I believe was from Texas. Any help you can give me in contacting this company would be greatly appreciated. Thanks.

Rich Lavenhgan
Arvada, Colorado

It sounds like you might be thinking about Power Stroke Enginuities [(832) 688-8702], a Houston, Texas–based company former editor Mike McGlothlin referenced in a report about modifying 6.0L Ford Power Stroke engines. PSE's 88mm PowerMax (a Garrett GT3788VA) is a direct-replacement upgrade turbo that supports up to 175 additional horsepower, without sacrificing an '03 to '07 Super Duty's driveability. BECS Pacific [(888) 359-3999] is a company Mike mentions in another report, that's specific to rebuilding turbochargers. However, that story, which appeared in our July '10 issue, was centered on rebuilding a 7.3L engine's turbo (Garrett TP38). BECS was the source for the rebuild kit, and it also offers similar parts packages for the GT3782VA turbos of the 6.0L engines.

LONE RANGER

I've been a big fan of your magazine for a couple of years. I have a '95 F-350 7.3L dualie and an '87 Ranger with a 2.3L Mitsubishi diesel. I would call myself quite the Blue Oval man! I actually got the Ranger after reading the article on the Ranger you guys are building. Unfortunately, mine came with a less exciting story, as it was only a mere 50 miles away and not in running condition.

The truck is missing only one thing—a harmonic balancer—which seems to be putting the whole project at a standstill. I was wondering if you guys had any leads on parts engines or parts trucks in the area, seeing as I think we aren't too far away.

Also, I really want to get a new set of glow plugs and was hoping to use the NGKs you guys went with, but finding a set, or even a part number for that matter, has been a nightmare. Do you have the part number for them, and where did you get them? Thanks in advance for any help you can lend me and even for taking the time to read my message. Can't wait to see more articles on your Ranger in the future.

Jesse Kinion
McMinnville, Oregon

We went straight to the source and asked Jason Gonderman about the glow plugs he uses in his Ranger, and where they can be purchased, and he answered, "The factory 6-volt glow plugs for the Mitsubishi 2.3L are discontinued. The glow plugs I use are NGK Y-107Rs, which can be purchased from Amazon (approx $20 each). Yes, they are 12-volt plugs, but they fit the 2.3L cylinder head, and they do a great job."

KEEPING IT REAL

I just read the October '14 issue. Aside from the coverage of DPCX, which I very much enjoyed, I really enjoyed the article "Bad Mega."

I love seeing a real-world, everyday work truck in your magazine. I have been subscribing to *Diesel Power* for 3 years now and love it. However, I would love to see more articles about trucks like that one.

It's nice reading about a truck that us guys who use our trucks for what they're made for can get ideas about. Anyway, it's just a thought.

Danny Staples
via email

Thanks, Danny. We try and keep things balanced when it comes to the diesel vehicles and diesel-related topics we cover. But we also appreciate your feelings about real-world trucks. Our sister magazine, Work Truck Review, *is The Enthusiast Network's primary publication that highlights hardworking rigs, but that doesn't mean you'll never see a true "work truck" on the pages of* Diesel Power. *Your letter brings Bob Lasky's '05 F-350 to mind. With the exception of a Banks Power intercooler, ARP head studs, and a K&N FilterCharger kit, Bob's rig is mostly stock, and it's used for tugging loaded horse trailers from Upstate New York down to Florida, approximately 45 times per year (2,600 miles round trip). After hearing these stats, we did the math and calculated that Bob's truck was closing in on the "Million Mile" mark (the 993,620 mileage reading on the odometer confirmed our estimate). Sure, the 6.0L Power Stroke has been treated to a freshening (new pistons, rings, and bearings at 700,000 miles), and the transmission has been rebuilt, but it's definitely a million-miler as far as we're concerned (and Bob says retirement is a long way off for the F-350). It doesn't get any more "real world" than that!*

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To all our readers, we thank you for your comments and compliments. Keep those emails and letters coming. Write to: **DIESEL POWER**, *831 S. Douglas St., El Segundo, CA 90245, or email us at* ***dieselpower@enthusiastnetwork.com***.

POSTAL ROUTE

LETTER OF THE MONTH

SPONSORED BY AutoAnything

ROAD TRIP!

First, I want to say I truly enjoy the magazine and read it cover to cover; my wife has a hard time pulling me away from it. Keep up the good work. I look forward to every issue.

Second, I'm writing to share with you and the readers a different kind of story—one we don't see very often, and one that doesn't involve big horsepower numbers or the latest and greatest lift system. It does, however, concern some very important numbers: 6.6L Duramax, 19.1 mpg, and 218,338 miles on the odometer.

As a new diesel enthusiast (one who just purchased his first diesel pickup in July 2014: a new-to-me, single-owner, '07 Chevy 2500HD Classic LBZ), I was faced with the proverbial question all diesel owners experience: What should I do with this rig? Of course, it goes without saying, the wish list has already been created. But, parts cost money, which for me means saving for the upgrades I want and plenty of time to sit and dwell on my list.

I am now pleased to announce that I have already made my first purchase. Two weeks after I pulled the beast into the driveway, I managed to sell a bunch of crap I wasn't using and allocated the funds toward a 5-inch exhaust system, courtesy of Diamond Eye Performance. Although it's not the optimal kit for me (in aluminized form), it has really improved the truck's performance, meets my budget, and puts a check in a box on the list.

With the first upgrade installed, I was anxious to see how the reduced backpressure would improve my fuel economy. Most would argue that an exhaust system doesn't really improve your mileage much and, for the most part, they would be right. But, I wanted to find out for myself. The perfect opportunity arose when my wife asked me to take some leave and get the family back home to Texas for a little vacation. The trip would give me an opportunity to visit with family, help with some estate planning, and meet my new nephew.

With the Duramax loaded up—albeit with more stuff than I thought we would need—our son strapped into his car seat, and our two dogs lounging on a folded-down rear seat, my wife and I saddled up for the 1,500-mile drive from Camp Pendleton, California, to Houston, Texas. Two days later, we rolled into Houston. For a truck with more than 200,000 miles on the clock, as far as mileage is concerned, I was happy.

The truck maintained an average of 19.1 mpg the whole way, a whole 2 mpg better than before the exhaust was installed.

Despite the rather uneventful trip, my happiness with the truck's performance came to a screeching halt after only three days in Houston. I was on my way back to the house after picking up some breakfast tacos when the dreaded "check engine" light lit up the gauge cluster. Needless to say, I immediately detoured the truck and pulled into the first AutoZone I came across. After plugging in a scan tool, I was pleasantly surprised by only a single code, P0028, which indicated three possible problems—all of which involved the coolant system.

Of course, I was still concerned, but I figured after the long trip, one of the thermostats was probably stuck in the open position and an ECT sensor was registering a lower-than-normal operating temperature. I eased the truck back to the house, confirmed my suspicions with some crafty forum searching, and took it into a local family-owned shop around the corner to have the thermostats replaced. The owner, a friend of my father-in-law, took great care of the truck and I was out the door in less than two hours. He was even kind enough to put the truck on his V2 programmer, update all my factory programs, and inform me that the truck was running perfectly—without any injector misfires (which are apparently common on older Duramax engines).

After three weeks of what turned into a working vacation, we loaded the truck back up and headed home. But this time, we chose a different route. After some discussion, the wife and I decided we would take I-40 instead of I-10, detour north of Flagstaff, Arizona, see the Grand Canyon, and head back to Camp Pendleton from there. This would prove to be a much more eventful drive and offered my wife and son an opportunity to see some beautiful American landscapes.

After a quick stop in Albuquerque to get some sleep, we were back on the

road, steadily rolling toward what has been labeled one of the Seven Natural Wonders. What a fantastic idea this route turned out to be. We drove through the Navajo Nation, Fort Defiance, Grand Canyon National Park, and the Kaibab National Forest. We stopped into Williams, Arizona, on Route 66 and, after getting back into California, drove through Joshua Tree National Park and the San Jacinto Mountains.

In total, the return trip was a little more than 1,800 miles, but the Duramax handled each and every mile without incident. As I write this letter, my odometer is resting just north of 218,000 miles and doesn't look to be stopping anytime soon.

From a new diesel enthusiast to the countless readers who wait anxiously for each new issue of *Diesel Power*—and to the men and women of the best diesel magazine I've read—I have to ask...where has your diesel taken you lately? What does your odometer read? Owning a diesel isn't just about big power, sled pulling, towing, or having the cleanest street-queen on the block. It's about owning a vehicle that's built to withstand mile after mile of abuse. Life is too short to pass up a good adventure! Now, get in your trucks and go explore our great and beautiful nation.

Shane J. Seery
San Clemente, California

Whew! That was quite the adventure, Shane, and we're glad to hear that your new-to-you Duramax didn't let you down as you covered the many miles. Life certainly is too short to not take advantage of opportunities like that. Congrats to you for understanding that and, like you, we hope there are fellow diesel owners who agree. Shane has asked some good questions, folks. Where has your diesel taken you lately?

As our Letter of the Month, Shane will receive a $100 gift certificate from aftermarket parts specialist Auto Anything (www.autoanything.com).

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—Diesel Power Magazine, May 2014.

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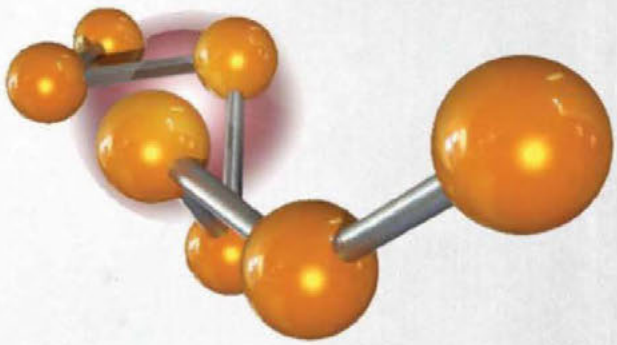
"We are seeing some great results using Archoil products at Jay Leno's Garage. We use it in many of our Classic Cars and Motorcycles. For example, in the 1915 Franklin, temperatures are down and the engine is running more smoothly. I highly recommend Archoil products, and intend to publish results as we experience them."

— George Swift, Mechanic
"Jay Leno's Garage"



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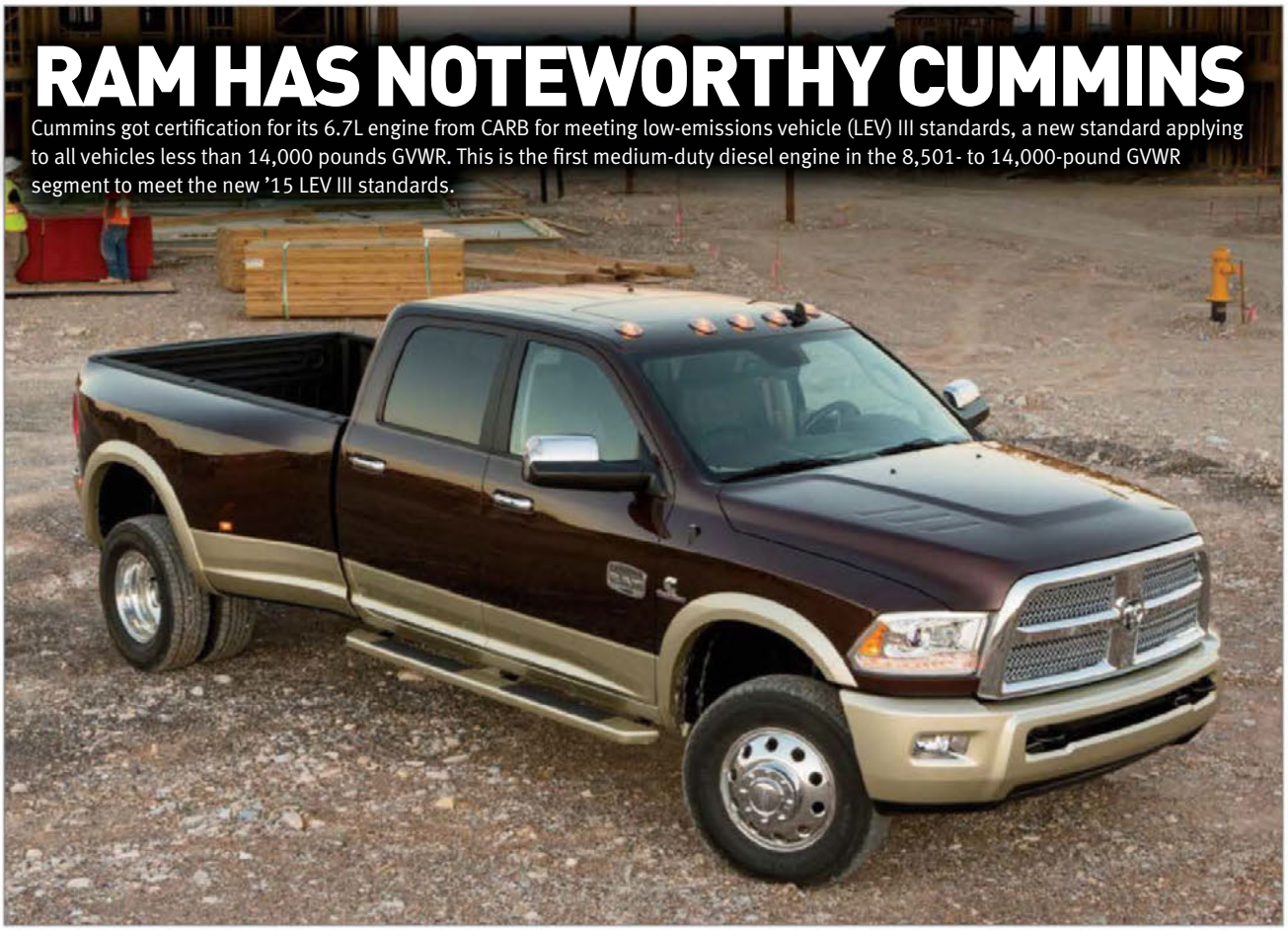
BY TORI TELLEM

POWER BITS

ALL THE TORQUE THAT'S FIT TO TWIST

RAM HAS NOTEWORTHY CUMMINS

Cummins got certification for its 6.7L engine from CARB for meeting low-emissions vehicle (LEV) III standards, a new standard applying to all vehicles less than 14,000 pounds GVWR. This is the first medium-duty diesel engine in the 8,501- to 14,000-pound GVWR segment to meet the new '15 LEV III standards.



PETERBILT, DAIMLER EXPAND TECH INSTITUTES

The Peterbilt Technician Institute (PTI) has grown to include a second location, in Lisle, Illinois. PTI worked with Universal Technical Institute (UTI) to have a training program at UTI's Dallas campus. The 12-week program gives students hands-on experience in diagnostics, maintenance, and repairs in order to become fluent in Peterbilt trucks and PACCAR engines. Students are sponsored by Peterbilt dealerships and employment is offered after they've completed the course.

Meanwhile, UTI has also expanded its Daimler Trucks North America Finish First program to Lisle as well. This prepares students for working as truck technicians at DTNA dealers nationwide. UTI noted that the expansion of the Finish First program is a big deal for the diesel industry, since half the currently employed diesel techs will be eligible to retire in the next 15 years.

One more UTI note: Bosch put together an educational scholarship and employment grant program through UTI Foundation in the amount of $50,000.

"There's been a generation of Americans who've grown up with no diesel car market in the U.S. And the ones who do remember diesel remember the ones from the '70s and '80s that weren't very good."

— **Steve Hansen** of Diesel Technology Forum to *Design News*

VALVOLINE DIY STORIES

Valvoline had been on the hunt for the best DIY tips and tricks for vehicle and garage projects, and now you can check them out in the Valvoline #GarageHacks series. The full gallery can be found at facebook.com/valvoline, but also head to Instagram and Twitter using @valvoline. Or use the #garagehacks hashtag.

RUMOR OF THE MOMENT:

Alfa Romeo for the U.S. with two diesel options.

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LAND ROVER DISCOVERY SPORT

Coming soon—early 2015—is the new Land Rover Discovery Sport, both in Europe and the U.S. On this side of the pond, the new ute will replace the LR2. However, the big question is, will the 190hp 2.2L diesel make it to the U.S., too?

"I never rule anything out in terms of diesel for the Jeep brand."

—Jeep brand's **President and CEO Mike Manley** to reporters

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eBay is watching you. And what did it see? Well, state by state, it captured an inside look at what were the most popular purchases. For example, in Alaska, it was hats. Connecticut, batteries. Construction equipment dominated in Kansas, and North Dakota was king of vehicles and parts.

"The first manufacturer that gets to 30 mpg wins. We are seeing that with our 28-mpg EcoDiesel as well as the 25 mpg on the Pentastar V-6 model that fuel economy is so important. We are seeing it in the share gains and the growth for the brand. That's a number that is out there, but I don't think you can stop there."

— **Robert Hegbloom**, the new head of the Ram brand to *Automotive News*

DIESEL BITS DIESEL BITS DIESEL BITS

- Researchers at Colorado State University got a nearly $1.5 mil. federal grant to delve deeper into the idea of biodiesel crop production.
- Bear Grylls (below) is now Land Rover's brand ambassador.

- Cummins saw the big 40th anniversary of its Jamestown Engine Plant in New York.
- Ford is working on building the largest solar array and second-largest solar carport in the Midwest. It would be located at Ford's HQ and have 360 covered parking spaces and 30 charging stations.
- Jeepwavefan.com is a new online store for Jeep goods. It was started by 14-year-old twins (below) and proceeds benefit charity.

- The new Toyo Open Country R/T is built for any kind of terrain—sand, rocks, dirt—and has a 45,000-mile treadwear warranty and No Regrets 45-day/500-mile trial offer.
- Goodyear named its newest, "redesign-iest" blimp Wingfoot One.
- The '15 GMC Sierra HD won the '14 Ultimate Heavy Duty Challenge 1-ton diesel category in the test conducted by cars.com, pickuptrucks.com, and mrtruck.com.

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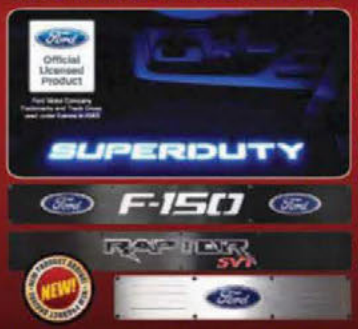

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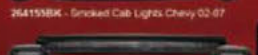

264156BK - Smoked Cab Lights Chevy 07-13

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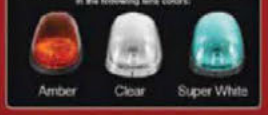

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264113CL - Clear Toyota Tundra 07-13

264125BK - Smoked Chevy & GMC 07-13

264118BK - Smoked Dodge RAM 02-09

264111BK - Smoked Ford Raptor & F150 09-13

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Before | After

264140BK - SMOKED 08-13 Ford SUPERDUTY Side Mirror Lenses

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PARTS BIN

BY TREVOR REED

SECOND-GEN COOL

Banks Power has designed a Ram-Air system for the second-generation 6.7L Power Stroke in the new '15 Ford F-250/350/450 trucks. Banks engineers say the computer-designed cold-air intake outflows the stock setup by 26 percent for more power and better fuel economy. The Ram-Air intake system has a fully sealed housing, a large high-flow reusable filter, and an exclusive bellows connection to prevent wear from engine vibrations and extend the service life.

Banks Power (800) 601-8072 • www.bankspower.com

FIRST-GEN FIXES

Owners of first-generation Dodge Ram diesels can now find tons of replacement parts in the new LMC Truck catalog for 1972 to 1993 Dodge trucks. Inside, you'll see everything from bumpers, door glass, and axle components to those harder-to-find replacement items such as the rubber pad on the brake pedal. To get a copy, all you need to do is call or visit the LMC Truck website and click on "Free Catalogs," and you'll get one in the mail within three to four weeks.

LMC Truck
(800) 562-8782 • www.lmctruck.com

THERE CAN BE ONLY ONE

Bolt Locks has announced a line of one-key products designed to work with the new, more secure, center-cut keys in '14 and '15 Chevy and GMC diesels. Now you can use your ignition key to open and secure a toolbox, receiver lock, cable lock, and even a padlock while reducing the number of keys you have to carry around.

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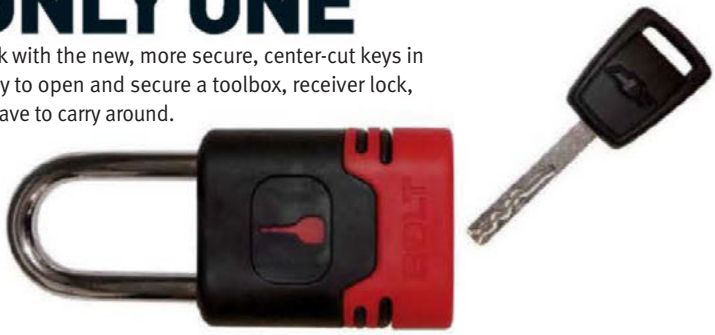

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Bullet Proof Diesel
(888) 967-6653 • www.bulletproofdiesel.com

KING KONG

The folks at Go-Truck-Yourself.com have come out with a bigger Deep Dish version of the Banana Pan for lifted Duramax trucks. In addition to eliminating the factory hump that can trap up to 2 cups of undrainable oil, the new Deep Dish Banana Pan holds an additional quart of oil. Like the original Banana Pan, the Deep Dish model is made from 356-T6 aluminum with built-in cooling fins, has a hole for a temperature gauge, comes with a stainless steel magnetic drain plug with a safety wire, and can be ordered with a 150-watt or 230-watt heater kit.

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(800) 474-7538 • www.go-truck-yourself.com

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Edge Products has teamed with Mossy Oak Brand Camo and Mechanix Wear gloves in its Hunt for Horsepower promotion. In addition to offering the CS and CTS in-cab controllers with the Break-Up Infinity camo pattern by Mossy Oak, Edge is also making customers who order one eligible for a free pair of matching Mechanix Wear FastFit gloves. Edge will also be randomly giving away Mossy Oak binoculars, backpacks, gear, accessories, and Edge prizes to customers submitting glove redemption forms, but supplies are limited.

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Merchant Automotive (866) 399-7169 • www.merchant-automotive.com

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You can upgrade your '04½ to '07 Dodge Ram fuel filter to a 2-micron unit thanks to the Cummins CAT Filter Adapter by Sinister Diesel. The adapter allows owners to mount a Caterpillar brand filter to the existing fuel filter head and greatly improve the cleaning of fuel to protect components such as the CP3 pump and the injectors. The CAT Filter Adapter by Sinister Diesel has a blue anodized finish that makes it look good while preventing corrosion inside and outside of the fuel system.

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BY JASON GONDERMAN

FINAL GEAR

WHERE WILL IT STOP?

The days have begun to get shorter, nights are cooler, trees are losing their leaves, and truck manufacturers are at war with each other. Just like the changing of the seasons, it comes like clockwork each September. One manufacturer introduces a new model it claims does something better than the one before it—or better than the competition—and this throws the world off its axis.

OK, maybe it's not that bad, but this year would have you thinking it actually is. Before I get too far, let me say this: I'm not here to take sides. I have my opinions, but in the interest of remaining as unbiased as possible, I'll be keeping them to myself. And in case you've been living in a cave—and there's nothing wrong with that—let me give a little background as to what's been in the news this past month.

Basically, Ford claimed Best-in-Class status for its '15 F-450's towing prowess (which I do agree it deserves), while some people question the merit of calling it a Class 3 pickup. Ram fired back and took the Best-in-Class honors for payload and torque with its '15 3500. GM simply sat back with a bag of popcorn and watched the drama as it unfolded. That's the short version, anyway.

Now, quarrels aside, let me tell you why I like seeing this happen. Simply put, competition breeds innovation. No matter what we're talking about—it could be trucks, sports, hobbies, or even work—when you're left with no competition, the necessity to improve goes away. This gives way to becoming lazy and ultimately content with your own mediocrity. Stop there. I'm speaking generally, so put down the pen—there's no reason to send the hate mail quite yet. And really, if you're already mad at me for bringing it up, maybe it's time to change things up in your life. OK, let's continue.

Why is this competition good, you ask? Well, it would seem that each time one of the Big Three diesel truck manufacturers announces a new model with more power, a higher payload, and greater towing prowess, one of the other two one-ups them. It usually takes a year before the competitor's model hits the market, but they sometimes strike right back. We saw a great example of this in 2011. Ford hit the market first with its all-new 6.7L Power Stroke V-8, rated at 390 hp and 735 lb-ft of torque. This performance was significantly higher than any of the competition's...until Ram announced that its '11 Cummins-powered trucks would make 350 hp and 800 lb-ft of torque. While Ford still had the edge on horsepower, Cummins walloped it in the torque category. Cue up number three, and GM steps to the plate with a new Duramax sporting 397 hp and 765 lb-ft of torque, sending Ford and its brand-new engine to the back of the pack just that quickly.

But not so fast, Ford had one more trick up its sleeve and showed it with the release of a new engine calibration that gave the new Power Stroke a bump to 400 hp and 800 lb-ft, solidifying its claim of the horsepower crown and tying Ram for torque.

Fast-forward to 2014; Ram's now sitting at the top with an engine that makes 385 hp and 850 lb-ft of torque. Ford then announces that the '15 Power Stroke will make 440 hp and 860 lb-ft, a number that is simply staggering for a factory-stock pickup. Well, Ram fired right back by issuing a new calibration that boosted torque output for the 6.7L Cummins to 865 lb-ft, just as we saw Ford do in 2011. But you knew this already.

So, why should you care about the bickering between manufacturers about who's on top? Because history has shown that this is what breeds better, more powerful, and more capable pickups. GM has been quiet through this latest round, and you know what? I'm betting it's holding the ace that's going to send Ford and Ram back to the drawing board. DP

Jason Gonderman
JGonderman@enthusiastnetwork.com

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BY TREVOR REED

BLOW-OFF LIGHT REPAIRS

Much like KJ's $30 camshaft position sensor adventure, at first, I thought about leaving a repair job to the professionals. Recently, the blinds in my living room broke, and I was stuck in the dark. At least they failed in the closed position, so I wasn't going to look like an incredibly boring diorama to the neighbors each night, but the darkness in the house during broad daylight was really annoying. It was like a "check engine" light for my home—a constant reminder that some little thing wasn't working properly.

My first thought was to look for local window shops that could fix the problem. Luckily, no one I called answered the phone, which sent me searching on Google for replacement parts. I ended up on a site with a name that seemed a little too "on the nose" called fixmyblinds.com. As it turns out, it isn't just some click-trap designed to get a bazillion page views from people sitting in dark living rooms. It's actually a specialized business in Colorado that's been around for almost 15 years, has an A+ rating from the Better Business Bureau, and only has one BBB complaint on record during the past seven years (which has been officially resolved).

After learning the part that controls the opening and closing of the blinds is actually called the "tilt mechanism," and not the "thingy turned by the stick," I started getting more confident. After seeing the replacement part would cost just $10, there was no turning back. I was going to fix the blinds—or break them trying. A house call from a repairman would cost at least $50, and I figured if I was going to take down the blinds and cart them to a shop, I might as well take a shot at doing the work myself.

The blinds weren't exactly easy to take down, but they were nothing compared to a heater core replacement I gave up on a few years back out of frustration and a lack of daylight. I ended up selling that truck with the heater core bypassed and a brand-new, in-box part for the next owner (who thought it was a great deal because it wouldn't leak, and he could sell the part, thanks to the hot climate in which he lives). With the blinds at ground level, it was a snap to follow the instructional video on the website and remove the tilt mechanism.

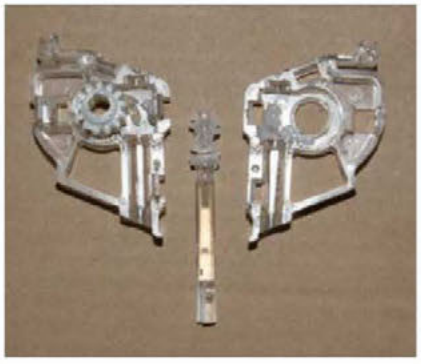
Yep, the internal plastic gears were indeed stripped and the part was done for. The "cheap" $10 replacement unit that arrived in the mailbox just a couple of days later had metal gears and a metal shaft. It should last about 95 years based on how long it took the old plastic parts to wear out. Plus, if any of the other five sets of blinds in the house go bad, I can probably cut the repair time down by about 75 percent now that I've already gone through all the steps.

So, if you have a nagging "check engine" light on around your house, why not try fixing it yourself before calling in the pros? You might just teach yourself something, as long as you do some research and don't get in over your head (no way I was messing with the natural gas meter after a plumber bumped it hard enough to trip the earthquake shut-off valve a few weeks ago). You can probably learn something new and save a few bucks at the same time. Plus, there's a sense of satisfaction that comes along with doing a job yourself—especially when you thought it was too hard before you knuckled-up and gave it a shot.

Trevor Reed
treed@enthusiastnetwork.com

The broken part that controls the opening of the window blinds is called the tilt mechanism. This particular style is called a "Low Profile Wand Tilter" for a 1½x2¼-inch head rail (the housing), and it uses a ¼-inch hex hole to drive the shaft that winds and unwinds the strings that open and close the window blinds.

The new tilter mechanism (right) from fixmyblinds.com (PN: TILTER-031) has metal internal gears and a metal shaft, and it costs just $10 (you can also buy one made from only plastic parts for $7.50, but why would you?). The shaft connects to the wand, which is the fancy technical name for the stick you turn to open and close the window blinds.



In addition to looking like an owl, when the old part was popped open, it revealed about three-fourths of the worm gear had broken off. It looked like bits of the gear had managed to help the mechanism to keep working for some time by building up and forcing the worm wheel to turn. That explained why the blinds had been slipping for some time but still "worked."

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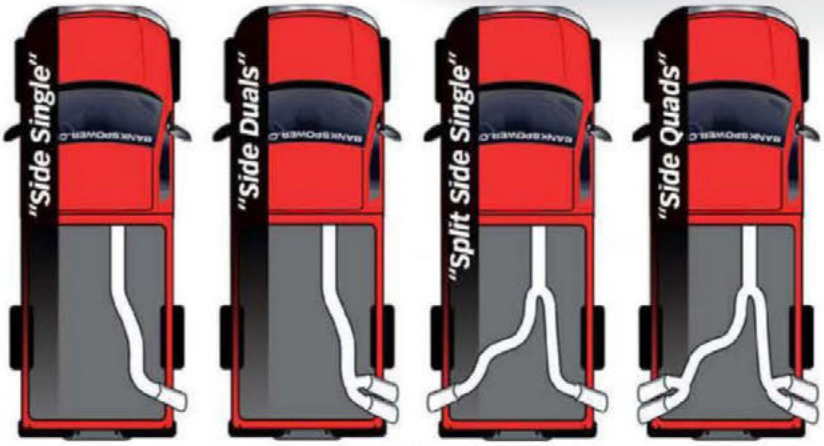

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BY TREVOR REED ■ PHOTOS COURTESY OF THE READERS

READERS' DIESELS

WE WANT TO PUT YOUR TRUCK IN *DIESEL POWER* MAGAZINE,
but we need your help. Please send us a high-resolution photo (the original photo file from your camera or phone), along with all the information you see listed below—plus anything else you'd like to tell us about your project. Send everything to dieselpowerrides@enthusiastnetwork.com, and you may make the cut. We can't respond to all the emails we receive, but we read every single one.

REBORN RAM

- **YEAR/MAKE/MODEL:** '07 Dodge Ram 2500
- **OWNER:** Wes Butcher
- **HOMETOWN:** Red Hill, Pennsylvania
- **ODOMETER:** 86,000 miles (7,000 miles on engine)
- **FUEL ECONOMY:** 17 to 20 mpg
- **ENGINE:** 5.9L Cummins inline-six
- **TRANSMISSION:** 48RE four-speed automatic
- **MODIFICATIONS:** 5.9L engine bored-over 0.020 inches, Mahle pistons and rings, 12-valve shot-peened and polished connecting rods, Hamilton 188/220 Street camshaft, billet pushrods, 110-pound valvesprings, ARP head studs and main studs, Industrial Injection 85-percent-over Dragon Fire CP3 injection pump, Exergy Engineering 50-percent-over injectors, Steed Speed exhaust manifold, Borg-Warner S363 turbo, Engineered Diesel 50mm external wastegate, Stainless Diesel cold-air intake, S&B air filter, CFM intake elbow, BD intercooler boots, MBRP 5-inch exhaust, AirDog II 150-gph lift pump, XDP grid heater delete and fuel filter delete kit, EFILive custom-tuned by Anarchy Diesel Tuning, ISSPRO gauges, 20x10-inch Ballistic Off-Road Jester wheels, 305/50R20 Toyo Proxes S/T tires, 1-inch suspension leveling kit, and custom-built traction bars
- **OWNER SAYS:** "I bought the truck in Texas and drove it 2,000 miles home. At the time, it was also running nitrous and making 829 hp. Three weeks later, I had a valve in the head crack, which sent pieces of it into cylinders #5 and #6, taking out those pistons and my S464 turbo. Then, the engine was rebuilt by my friend, Dale Peters, using new pistons and rings, a brand-new cylinder head, and a quicker-spooling S363 turbo. Future plans include an S363/S475 twin-turbo setup and a new intercooler."

RICH MAN'S TRUCK

- **YEAR/MAKE/MODEL:** '97 Ford F-250
- **OWNER:** Aaron Fouse ■ **HOMETOWN:** Two Rivers, Wisconsin
- **ODOMETER:** 162,000 miles ■ **FUEL ECONOMY:** 16 to 22 mpg
- **ENGINE:** 7.3L Power Stroke V-8
- **TRANSMISSION:** E4OD four-speed automatic
- **MODIFICATIONS:** Peterbilt intake, 5-inch exhaust, and an upgraded torque converter
- **OWNER SAYS:** "I originally bought this pickup for work, but now it's my big baby. It embodies what a real truck is and should look like. This truck is as reliable as the sun, and if I got a dollar every time someone asked to buy it, I'd be rich."

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SIGNING BONUS

- **YEAR/MAKE/MODEL:** '03 Dodge Ram 2500
- **OWNER:** Paul LaFond
- **HOMETOWN:** Schuylerville, New York
- **ODOMETER:** 47,000 miles ■ **FUEL ECONOMY:** 18 to 22 mpg
- **ENGINE:** 5.9L Cummins inline-six
- **TRANSMISSION:** NV5600 six-speed manual
- **MODIFICATIONS:** Smarty S06-POD programmer, ARP 425 head studs, K&N cold-air intake, Raptor 150-gph lift pump, MBRP 4-inch exhaust, 2-inch Tuff Country suspension leveling kit, 17-inch KMC XD Hoss wheels, 35x12.50R17 Goodyear Fierce Attitude MT tires
- **OWNER SAYS:** "I finally bought this truck with part of my National Guard signing bonus from my dad's buddy…after bugging him about it for about five years. It has really low miles and was never driven in the winter. I'm slowly trying to build it up based off the 5.9L common-rail Cummins $5,000 = 600hp truck you guys showed ("On A Budget," August 2013), but it's a slow process for a 19-year-old college kid."

PROJECT OVERKILL

- **YEAR/MAKE/MODEL:** '10 Ford F-350 XLT
- **OWNER:** Aaron Adrian ■ **HOMETOWN:** Salina, Kansas
- **ODOMETER:** 45,000 miles
- **FUEL ECONOMY:** 16 mpg
- **ENGINE:** 6.4L Power Stroke V-8
- **TRANSMISSION:** 5R110 TorqShift five-speed automatic
- **MODIFICATIONS:** Flatbed conversion by Ford, headache rack with KC spot lamps, bull bar front push bumper, Flo-Pro 4-inch exhaust, and Sinister Diesel coolant filter
- **OWNER SAYS:** "I had Ford build this flatbed truck as a present to myself for getting my house paid off. I figured I'd get a truck that is total overkill for any of my uses. The biggest thing I had at the time was a 22-foot-long boat, but a couple of years later I married into ranching. I'm a huge fan of the 6.4L Power Stroke engine. My only complaint is the fuel usage when I'm hauling."

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RODEO PRO

- **YEAR/MAKE/MODEL:** '04 Ford F-350 King Ranch
- **OWNER:** John Fellin
- **HOMETOWN:** Littleton, Colorado
- **ODOMETER:** 74,486 miles
- **FUEL ECONOMY:** 15 mpg (while towing)
- **ENGINE:** 6.0L Power Stroke V-8
- **TRANSMISSION:** 5R110 TorqShift five-speed automatic
- **MODIFICATIONS:** Edge programmer, exhaust turn-down tip, running boards, bedliner, billet grille, and custom paint on truck and trailer
- **OWNER SAYS:** "My truck is used to pull a 27-foot-long horse trailer with living quarters for the professional rodeo circuit during four months of the year. This truck was purchased with factory paint that was two-tone white over tan. I had the tan covered with white, and a graphic was made to run from the front of the truck all the way to the back of the trailer."

SELF-PROPELLED

- **YEAR/MAKE/MODEL:** '06 Dodge Ram 2500 Mega Cab
- **OWNER:** Chase Shrum
- **HOMETOWN:** Merritt Island, Florida
- **ODOMETER:** 170,000 miles
- **FUEL ECONOMY:** 17 to 19 mpg
- **ENGINE:** 5.9L Cummins inline-six
- **TRANSMISSION:** 48RE four-speed automatic
- **MODIFICATIONS:** Smarty TNT programmer, S&B cold-air intake, Flo-Pro 5-inch exhaust, Flex-a-lite electric fans, AirDog II 165-gph lift pump, Sun Coast full-billet transmission, Mag-Hytec Double-Deep transmission pan, 12-inch Top Gun Customz long-arm suspension lift, Dirt Logic 2.5 shocks, '09 Dodge Ram steering upgrade, 24x12-inch American Force Recon wheels, 38-inch Nitto Trail Grappler tires, custom headlamps, shaved tailgate, and matching teal painted parts throughout
- **OWNER SAYS:** "All the performance work was done by Central Florida Diesel Performance. This truck now runs 14.3 seconds in the quarter-mile. I drive it every day and use it to pull a trailer—not ride on one. This is no trailer queen."

LONE STAR SUPER DUTY

- **YEAR/MAKE/MODEL:** '05 Ford F-250 King Ranch
- **OWNER:** Ab Eskander
- **HOMETOWN:** Katy, Texas
- **ODOMETER:** 103,000 miles
- **FUEL ECONOMY:** 13 mpg
- **ENGINE:** 6.0L Power Stroke V-8
- **TRANSMISSION:** 5R110 TorqShift five-speed automatic
- **MODIFICATIONS:** SCT Livewire programmer, Bully Dog monitor, ARP head studs, Black Diamond head gaskets, oil cooler upgrade with screen, water pump upgrade, Ford intake and exhaust gaskets, Ford turbo bolt and O-ring kit, Sinister Diesel coolant filter, AFE Stage 2 cold-air intake, MBRP 4-inch exhaust with 6-inch tip, 10-inch Fabtech suspension lift, Fox Racing shocks, 37x13.50R20 Toyo Open Country M/T tires, custom-painted 20x12-inch Fuel Nutz D541 wheels, custom-painted Ranch Hand front and rear bumpers, LED spot lamps and fog lamps, Rigid Industries A-Series LED lamps in the wheelwells and bed, custom-painted headlamps and taillamps, Recon LED lightbar and cab lights, custom-painted fender flares, AMP Research powered side steps, Cobra CB radio, and Omega train horns
- **OWNER SAYS:** "Next, I want to install an '08 tailgate as well as '08 tow mirrors. For more performance, I want to add a PowerMax turbo, an intake elbow from Sinister Diesel, bigger injectors, and many more upgrades."

DIESEL DEDICATION

- **YEAR/MAKE/MODEL:** '06 Chevrolet Silverado 2500HD LT
- **OWNER:** Josiah Swim
- **HOMETOWN:** Theresa, New York
- **ODOMETER:** 142,000 miles
- **FUEL ECONOMY:** 17 to 21 mpg
- **ENGINE:** 6.6L Duramax V-8
- **TRANSMISSION:** Allison 1000 six-speed automatic
- **MODIFICATIONS:** Airaid cold-air intake, MBRP 4-inch exhaust and Quiet Tone high-flow muffler, Merchant Automotive transfer case upgrade pump rub kit, Cardone hydroboost upgrade, Rancho RS5000 shocks, 16-inch KMC XD Enduro black wheels, 265/75R16 Goodyear Wrangler Duratrac tires, Line-X on the rocker panels, and a Daws Better Built toolbox
- **OWNER SAYS:** "I've had a lot of fun reading your magazine and working on my last two diesel trucks: a Ford 7.3L and now a Duramax LBZ. I went from knowing *nothing* about diesel trucks three years ago to being a dedicated fan and amateur driveway tinkerer thanks to *Diesel Power.* I picked up this truck when it was used and abused, just before a military move. It towed my family's goods through the entire Appalachian highway route from Georgia to Fort Drum in upstate New York—steep grades and all. It did great despite a lack of maintenance by the previous owner. Now, she's all fixed up and making entry-level performance with work done by myself and the folks at Flyin' Ryan's Diesel Performance shop."

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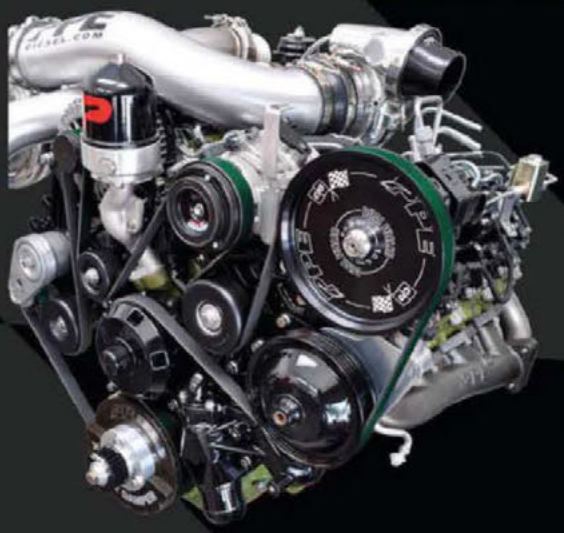

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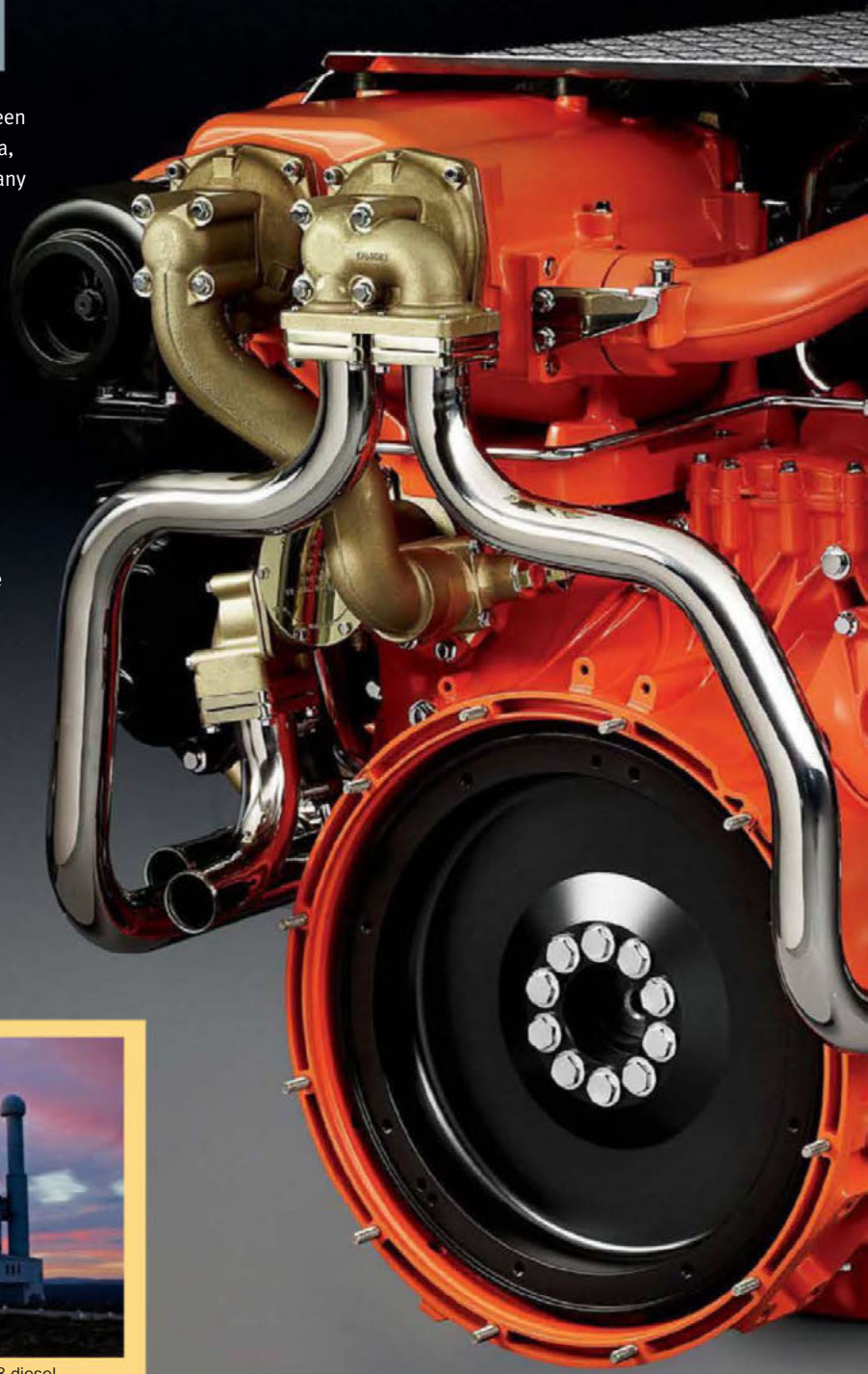


The DI6 077M 16.4L diesel engine seen here was created in-house by Scania, a Södertälje, Sweden–based company that is better known as a maker of trucks and buses. The company, founded in 1891, also builds high-powered diesel engines and has managed to avoid a profit loss since 1934 (that's 70 years and counting).

The DI16 077M is a 16.4L V-8 diesel engine capable of making 1,000 hp and 2,254 lb-ft of torque at the flywheel. The engine has twin turbochargers that push air through a seawater-to-air intercooler and into modular cylinder heads that can be individually removed for repair and maintenance. This flexible architecture is shared with a 9.0L, inline five-cylinder engine, and a 13.0L, inline-six mill that were also designed in-house by Scania.

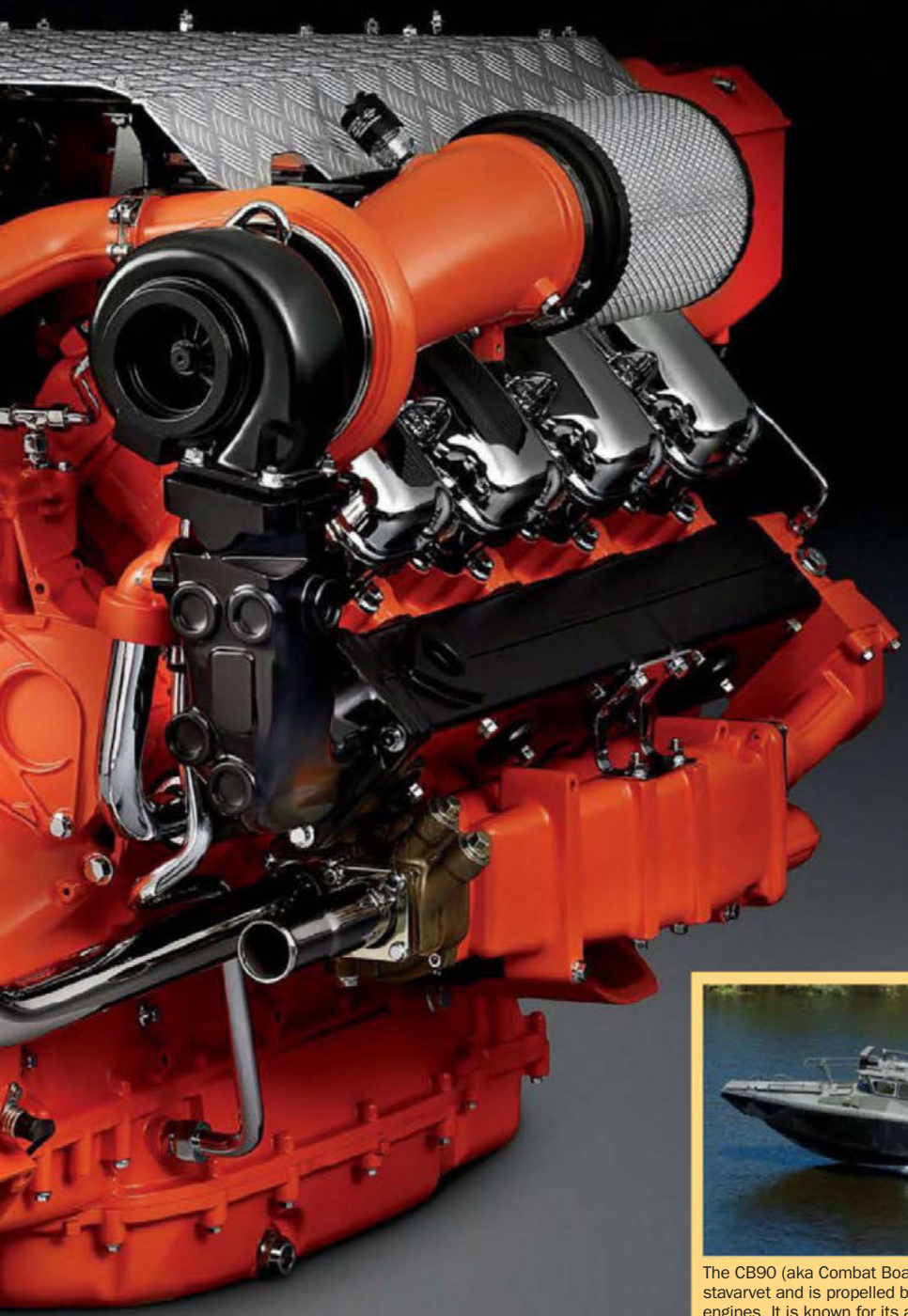
The 16.4L engine is used to provide marine diesel power for everything from ferries and rescue boats to military pursuit vessels. Different configurations of the 16.4L are also used for power generation and backup. In fact, these monster V-8 engines are being used to provide backup electricity to a House of Parliament, and to power the SAAO observatory in South Africa.

In addition to its marine applications, the Scania 16.4L V-8 diesel engine is also used to provide power to facilities, including the SAAO observatory in South Africa.

BY TREVOR REED ■ PHOTOS COURTESY OF SCANIA

DI16 077M 16.4L V-8

16.4 LITERS AND 2,254 LB-FT OF SWEDISH DIESEL POWER



SPECIFICATIONS

- **ENGINE:** Scania DI16 077M 16.4L
- **CONFIGURATION:** V-8
- **VALVETRAIN:** OHV 32-valve
- **DISPLACEMENT:** 16.4L (1,000 ci)
- **BORE X STROKE:** 5.11 x 6.06 inches
- **COMPRESSION RATIO:** 16.7:1
- **BLOCK MATERIAL:** Cast iron
- **HEAD MATERIAL:** Cast iron
- **PISTONS:** Steel
- **CAMSHAFT:** High-position alloy steel
- **CONNECTING RODS:** I-section press forgings of alloy steel
- **CRANKSHAFT:** Alloy steel with hardened and polished bearing surfaces
- **ASPIRATION:** Twin turbochargers
- **AFTERCOOLING:** Seawater-to-air intercooler
- **FUELING:** Unit injectors
- **POWER:** 1,000 hp at 2,300 rpm
- **TORQUE:** 2,254 lb-ft at 2,300 rpm
- **PISTON SPEED:** 30.2 feet per second at 1,800 rpm
- **OIL CAPACITY:** 10 to 12 gallons
- **MAXIMUM FUEL CONSUMPTION:** 52.8 gallons per hour
- **ELECTRICAL SYSTEM:** 2-pole 24-volt
- **STARTER MOTOR:** 2-pole 9.5 hp
- **ENGINE LENGTH:** 5 feet, 1 inch
- **ENGINE WIDTH:** 4 feet, 1 inch
- **ENGINE HEIGHT:** 3 feet, 11 inches
- **WEIGHT:** 3,862 pounds (dry)

The CB90 (aka Combat Boat 90) was designed for the Swedish Navy by Dockstavarvet and is propelled by dual Scania 16.4L V-8 twin-turbocharged diesel engines. It is known for its ability to take sharp turns quickly and come to a full stop from its top speed of 40 knots (74 km/hr) in just 2.5 boat lengths.

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ALL-NEW '15 VOLKSWAGEN GOLF TDI

MORE POWER, SIZE, AND CLEAN-DIESEL MPG

BY KJ JONES ■ PHOTOS BY KJ JONES AND COURTESY OF VOLKSWAGEN

Let's take a moment to think back to the mid-'70s to late '80s, the proverbial "old days," as far as diesel cars are concerned, as diesel engines were not found in passenger cars—foreign or domestic—as much as they are today. Yes, it truly does seem like centuries ago at this point.

As our older readers probably remember, Mercedes-Benz was one of the only brands that had any real success with diesel cars during this period, through sales of its inline five-cylinder, 3.0L-powered, 240D and 300D sedans. Volkswagen, another German automaker, was also making inroads in diesel technology during that time and, in 1976, it introduced a naturally aspirated, four-cylinder, 50hp, 1.5L indirect-injection engine that would be used in the first-generation VW Golf, which was sold in the U.S. as a "Rabbit."

Think about that for a moment. At this point, it was more than 40 years ago that Volkswagen, motivated by the goal of achieving both sporty performance and, more importantly, outstanding fuel economy (the U.S. was in the thick of an oil crisis during this time) for its compact passenger cars, dubbed the Golf as the flagship for its small diesel powerplant.

Of course, Golf and Volkswagen's diesels have evolved through the years and, in 2015, both the car and its drivetrain have once again experienced changes that have taken Golf into a new generation.

One of the major changes for the seventh-generation Golf is its diesel engine: the 150hp, 236-lb-ft-of-torque EA288. The all-new, turbocharged Clean Diesel 2.0L is up 10 hp compared to the 2014's

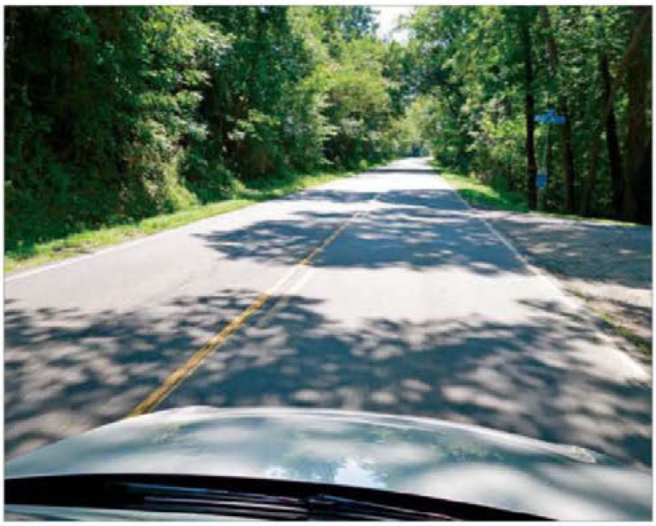
ALL-NEW '15 VOLKSWAGEN GOLF TDI

Upon arriving at the beautiful Salamander resort in Middleburg, Virginia, Editor KJ Jones and fellow automotive journalists were greeted by an armada of '15 Volkswagens, fueled and ready for testdrives. The term "fueled" takes a new meaning for the '15 VWs, as electric power ('15 eGolf) now joins gasoline and diesel.

engine and achieves a reported 45 mpg on the highway...a gain of 3 mpg compared to the previous year's TDI.

The seventh-gen Golf also introduces VW's *Modularer Qyerbaukasten*, or Modular Transverse Matrix architecture (which, by way of several levels of translated German, simply becomes "MQB" for short), a new chassis structure the company says "gives the new Golf a more upscale appearance while retaining classic design cues from the Mk1 and Mk4 models." The '15, while bigger than its predecessors on the inside (increased cargo area, rear-seat legroom and shoulder space), is also longer, wider, and lower than years prior, and it weighs in lighter as well (3,080 pounds/six-speed manual and 3,126 pounds/six-speed automatic).

The all-new "A7" Golf TDI hit U.S. dealerships in August 2014. A few weeks before making its debut, we had the pleasure of driving the seventh generation of VW's best-selling hatchback (in SE trim, MSRP $26,595). The following photos and captions detail our experience driving the Golf through the beautiful country setting of Middleburg, Virginia.



When we stretched our test Golf out across the backroads of rural Middleburg, the car responded with smooth, linear acceleration and seamless engagement of its six-speed, dual-clutch automatic transmission. Despite the spirited driving, which the SE's comfortable but very responsive suspension seems to really enjoy, our calculated fuel mileage was just a shade less than 43 mpg.

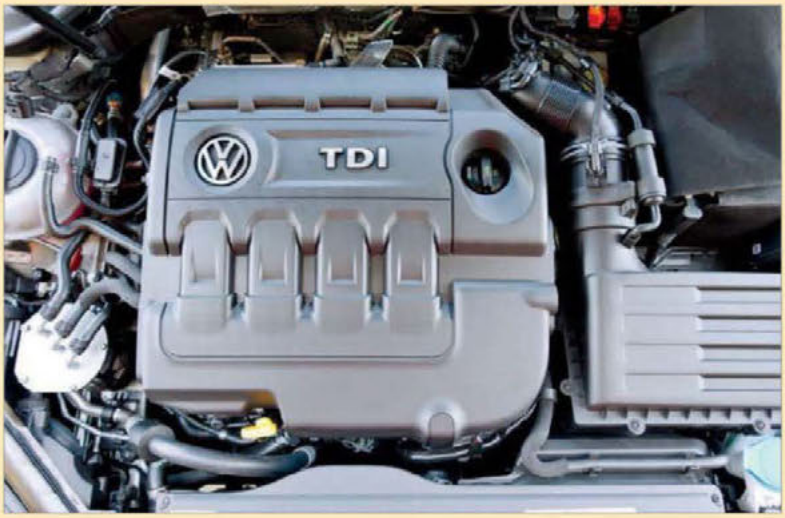
Now in its seventh generation, the five-passenger '15 Golf TDI is Volkswagen's flagship for its all-new, EA288 turbodiesel engine, and MQB modular chassis.

Road test "loops" took us down the main street of Middleburg, Virginia, where the speed limit is a *strict* 25 mph. The historic, Civil War–era village has one traffic light, which managed to turn red every time we approached it.

Here's one of the bigger deals of Golf's revamp...literally: increased trunk capacity and more versatile load space. With the rear-seat backrest (60:40 split) "up," cargo capacity is improved by approximately 8 percent, to 16.5 cubic feet up to the parcel shelf and 22.8 cubic feet to the roof. The load area is now easier to access, thanks to a load sill that is 0.7 inches lower and an opening that is 1.9 inches wider. The load space is further enhanced by the ability to raise or lower the trunk floor by 3.9 inches, and folding down the backrests for 52.7 cubic feet of cargo capacity, a full 15 percent more than previous Golfs.

The Golf's cabin received a space increase for 2015, as well as refinements in seat and pedal positions, and various driver controls. The level of interior luxury has also been stepped up for once-basic TDI "S" models, with standard V-Tex leatherette seating surfaces, cruise control, VW Car-Net connected services, a leather-wrapped handbrake and shifter knob, a multifunction steering wheel that now incorporates the buttons for the cruise control, and partial power seats on the four-door cars. A new, 5.8-inch touchscreen infotainment system is standard on all Golf models. (Golf SE six-speed manual shown here.)

Despite the new Golf's lower stance, its interior space is now 0.6 cubic feet greater than the 92.9 cubic feet of the sixth-generation Golf. The rear seat area picked up 1.1 inches of shoulder room, some additional legroom, and a bit more elbow room, too. We all know how important all three of these space values are for tall or burly passengers.



EA288 2.0L TURBODIESEL ENGINE

This is the 2.0L, four-cylinder, direct-injection EA288 engine that's found under the hood of '15 Golf TDIs. Sharing nothing design-wise with the previous EA189 engine (with the exception of cylinder-bore spacing), this cast-iron powerplant boasts 150 hp—10 more horsepower than its predecessor—and puts out 236 lb-ft of torque. The turbocharger's intercooler is incorporated with the intake manifold, which helps create crisp throttle response and lower emissions. The unique, aluminum-alloy cylinder head features camshafts that are integrated into a separate housing, and each variably phased cam operates only two valves per cylinder (intake and exhaust), instead of separate cams that cycle intake valves and exhaust valves independently. With the EA288's exhaust after-treatment module positioned close to the engine, emissions are reduced by up to 40 percent. The EA288 is the first engine in Volkswagen's revamped diesel lineup and will be the standard used for all future four-cylinder U.S.-market Volkswagen diesels.

SPECIFICATIONS

- **DISPLACEMENT:** 2.0L
- **CONFIGURATION:** Inline four-cylinder
- **POWER:** 150 hp at 3,500 to 4,000 rpm
- **TORQUE:** 236 lb-ft at 1,750 to 3,000 rpm
- **TURBOCHARGING:** Fixed turbo
- **BORE X STROKE:** 3.19 x 3.76 inches
- **VALVETRAIN:** DOHC 16 valves
- **HEAD MATERIAL:** Aluminum
- **BLOCK MATERIAL:** Cast iron
- **TRANSMISSION:** Six-speed manual or six-speed dual-clutch automated manual

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BY JOE GREEVES ■ PHOTOS BY JOE GREEVES

BEST OF BOTH

A SHOP TRUCK THAT'S AT HOME ON THE STRIP AND THE STREET

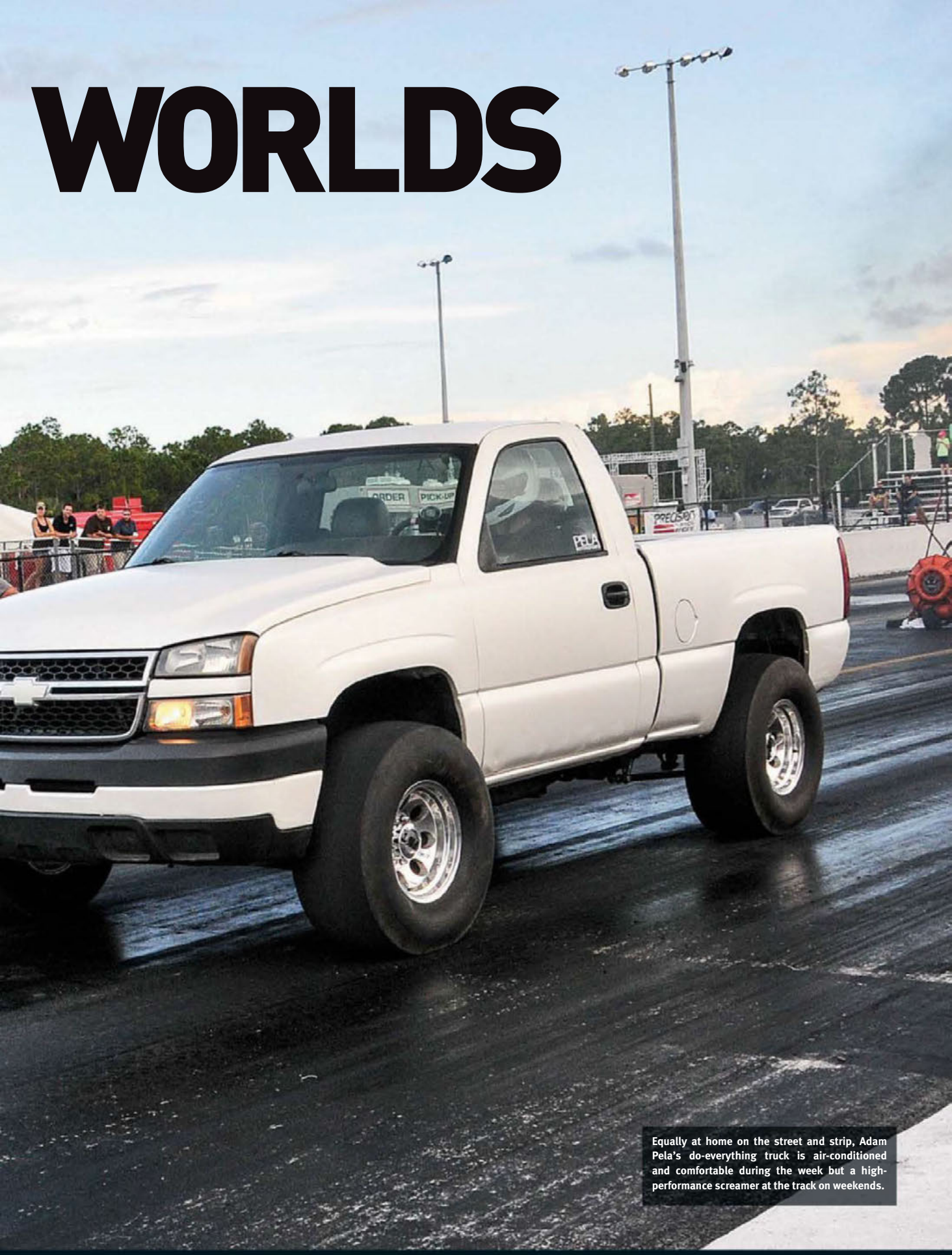
If you've been shopping for a truck lately, you know manufacturers go to great lengths to give you an endless variety of choices: two-doors, four-doors, regular cabs, extended cabs, crew cabs, longbeds, and shortbeds combined with multiple powertrains and dozens of interior and exterior options. Every now and then, however, there is the urge to create something unique.

That was the approach Adam Pela took when it came to his '06 Chevy Silverado 2500HD. As the owner of Pela Motorsports, Adam is a mechanical design engineer by day and a performance guru after-hours, specializing in the Duramax. His vehicles have appeared in our sister magazine *8-Lug*, as they combine good looks with Adam's trademark techniques of squeezing out considerable extra power.

Adam knew that from a business standpoint, nothing better displays your talents than your own shop truck, so he decided to combine the best of both worlds, via the purpose-built Silverado you see here. The Chevy's transformation took six months, resulting in a regular cab shortbed with an engine potent enough to make it a dragstrip screamer and reliable enough to be an air-conditioned daily driver in his hometown of Jupiter, Florida.

Performance is always high on the list, and the engine upgrades began with a .020-inch overbore of the factory LBZ block. The balanced factory crank uses Carillo connecting rods, delipped LML pistons, Clevite bearings, and a SunCoast billet

WORLDS



Equally at home on the street and strip, Adam Pela's do-everything truck is air-conditioned and comfortable during the week but a high-performance screamer at the track on weekends.

BEST OF BOTH WORLDS

The LBZ engine benefits from a compound-turbo setup, custom 4-inch-diameter exhaust, and an Allison 1000 transmission with SunCoast converter.

flywheel. ARP head studs and main studs keep everything securely in place. Aspiration modifications began with a custom compound-turbo package from Pusher Intakes that uses a Garrett PowerMax GT4094 turbocharger as the primary. Adam chose the Stage 2 version for its larger compressor trim as well as the larger GT40 turbine wheel and vanes over the Stage 1 unit. It's paired with a BorgWarner/Airwerks S475 T6 turbocharger with an 88mm compressor wheel. Fuel needs are met with 100-percent-over nozzles built by Exergy Performance, augmented with a Nitrous Express 150hp kit and a Sinister Diesel billet fuel sump. The nitrous is used more for cooling at the end of the track than for additional horsepower.

Exhaust upgrades include PPE manifolds and up-pipes feeding a 4-inch-diameter exhaust with no muffler. An Edge Insight CTS monitors vital engine functions while Adam's EFILive tuning controls the engine and transmission. Handling the estimated 800 hp is an '06 Allison 1000 transmission using a SunCoast 1055 torque converter reworked by transmission guru Dmitri Millard.

Putting the mega-motor aside, Adam began work on the chassis. Since the factory didn't make a regular cab shortbed, Adam began the personalization process by creating his own. He cut the frame down to match the factory wheelbase of a regular cab shortbed, using factory brackets and hardware for a GM shortbed truck. The reinforced rails now hold a modified suspension setup beginning

"Adam knew that from a business standpoint, nothing better displays your talents than your own shop truck, so he decided to combine the best of both worlds..."

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BEST OF BOTH WORLDS

The Silverado is a regular at Palm Beach International Raceway, where its four-wheel launch and slicks consistently propel the truck through the lights in the mid-10s.

The passenger-side headlight on the '06 Silverado is removed at the strip to allow increased airflow to the compound-turbo setup. It goes back in for highway use. The shortened Silverado sports a flat pearl wrap finish.

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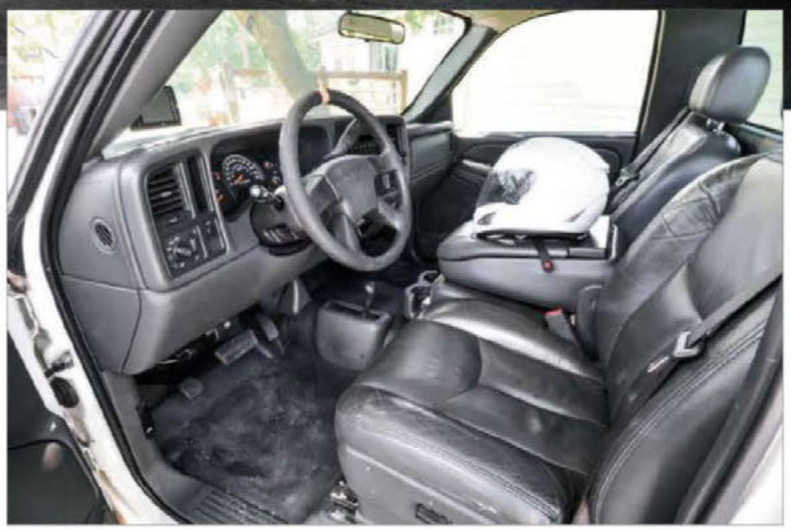
BEST OF BOTH WORLDS

with a factory AAM 11.5-inch rear axle fitted with a welded rear differential and 3.73 gears.

The overload springs were removed and the new CalTracs traction bars and Bilstein shocks help to plant the power. Up front, the factory GM 9.25-inch independent front suspension was fitted with an Eaton ELocker and matching 3.73 gears. The axle is supported by Cognito upper control arms and Bilstein shocks, with Rare Parts G2 HD tie rods ensuring responsive steering. Cross-drilled brake rotors guarantee quick stopping power while the floor-shifted transfer case directs power to all four wheels. The truck runs on 16x10-inch Mickey Thompson wheels with four 33x10.50R16 Mickey Thompson slicks on the strip.

All that was left was assembly and cosmetics, with Adam choosing a flat pearl wrap for the exterior.



The factory interior gets the job done for now, with upgrades scheduled for the future. For now, the only additions are an aftermarket display and a strip of tape showing when the steering wheel is at dead center to keep Adam going straight down the track.

The Edge Insight CTS display, with its color touchscreen, monitors vital engine functions.

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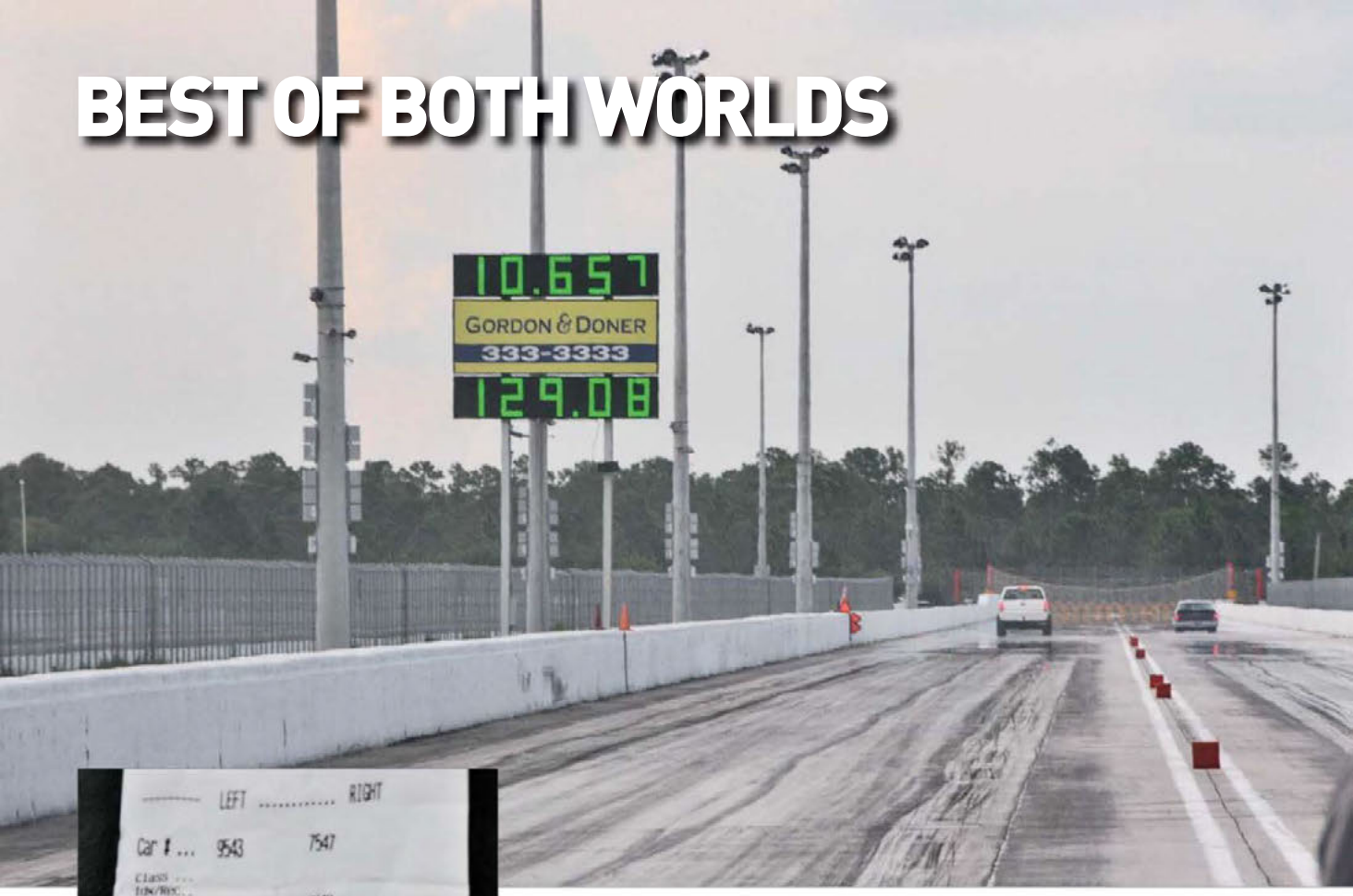

The stock factory interior works just fine and will probably be refreshed sometime in the future. Adam now has a truck with the ability to perform as a regular driver during the week and a track day missile on weekends. We photographed the truck at Palm Beach International Raceway in Jupiter, Florida, where the 5,500-pound truck (estimated) turned 10.6-second times at 129 mph in the quarter-mile. Adam drove the air-conditioned Chevy to the track and home, proving that with the right mix of parts and skill, you really can have the best of both worlds!

The AAM 11.5-inch rear axle is supported by factory springs and controlled by CalTracs traction bars and Bilstein shocks. Cognito upper control arms, Bilstein shocks, and Rare Parts tie rods upgrade the GM 9.25-inch IFS, equipped with an Eaton ELocker and 3.73 gears.

Chevrolet didn't make a regular cab, shortbed ¾-ton, although the lines look factory. Not much gives away the performance capabilities of this truck until you take a closer look at the huge Mickey Thompson slicks on all four 16-inch wheels.

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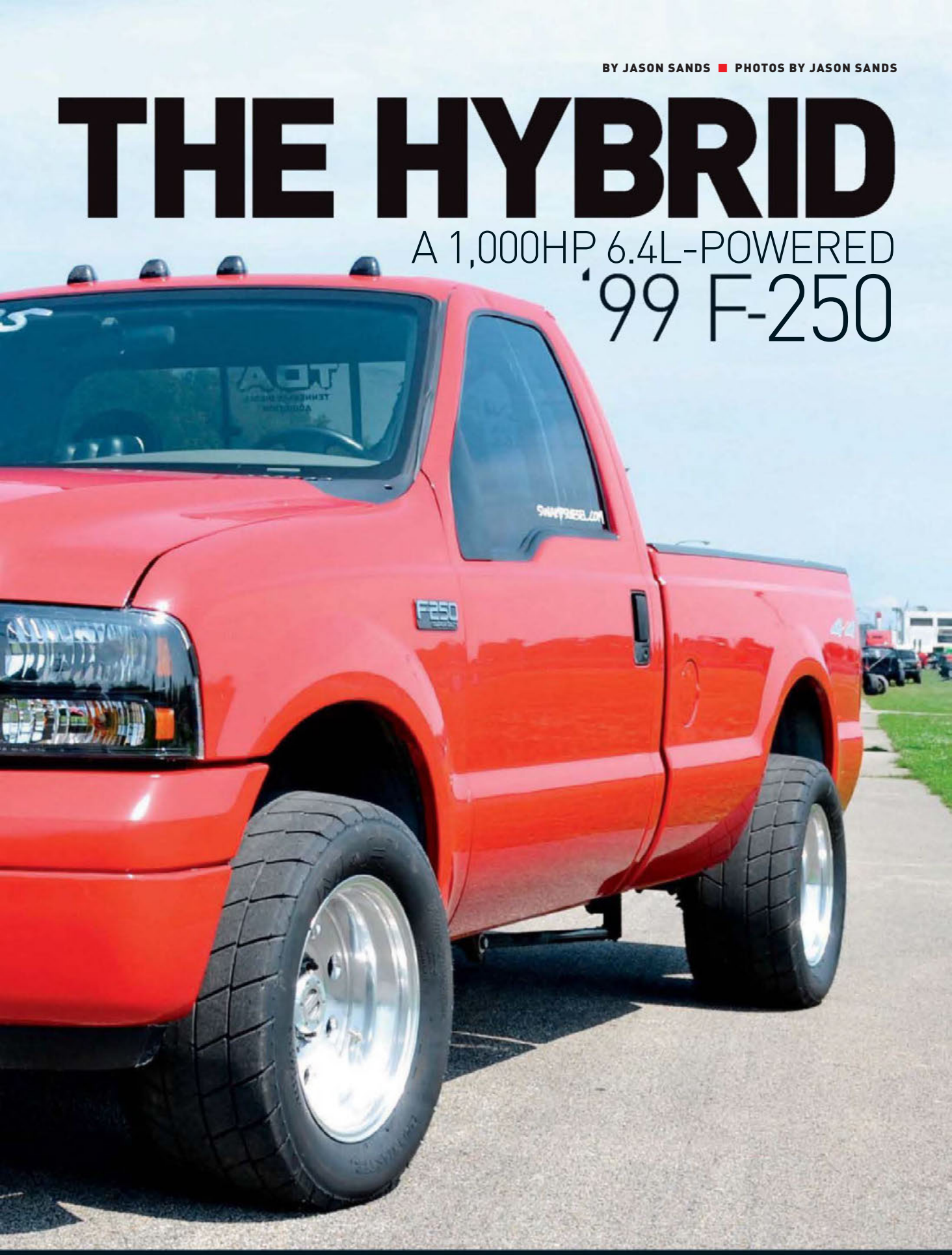
BY JASON SANDS ■ PHOTOS BY JASON SANDS

THE HYBRID

A 1,000HP 6.4L-POWERED '99 F-250



THE HYBRID

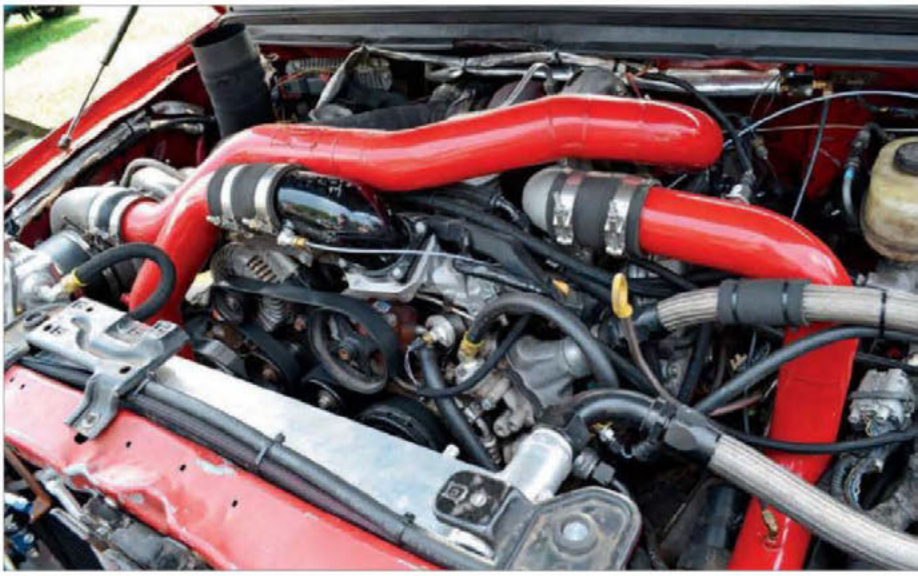
Swamp's Diesel's nitrous-assisted, big-horsepower, 7.3L, two-wheel-drive F-250 (near lane) is no slouch. So, when we saw another Ford outrunning it, we went right over to see what was under the hood. It sounded like a V-8 going down track, but we were confused by what kind of Ford engine could make the power needed to go 106 mph in the eighth-mile!

This particular story starts with a 6.4L Ford Power Stroke engine sitting on an engine stand at a shop, and a '99 Ford F-250 drag truck that had been sitting neglected outside the same shop for nearly 10 years. Eventually, Dan Morin decided he'd make 2+2=5 and shoehorn the new engine into the older truck, no matter what it took.

You see, Dan works at Swamp's Diesel in Laverne, Tennessee, and both he and owner David Armstrong viewed building a new drag truck as a good way to generate interest in their business and lure in the customers who want to go fast. Since the older truck would be a whole lot lighter in both frame and body—and since they already had the engine and the truck—it just kind of made sense to put everything together into one project.

"It was a good idea," Dan notes, "but it was a lot of work. It took months of working on the truck all day, five days a week just to get it running and driving." To start, Dan mounted a 4R100 automatic transmission with a gasoline-engine case (which would work with the 6.4L) and bolted it up to the transfer case, so the '99's existing axles and driveshafts could be used. Next, custom engine mounts were fabricated, allowing the 6.4L to sit in the engine bay without interfering with anything. With the 6.4L and the truck's original 7.3L being about the same size, the physical aspects of the swap weren't that bad. Not so, however, with the wiring.

"We had a donor '08 Ford we knew we could rob parts off of for doing the wiring," Dan says. "It took a lot just to get it running, and by the time we were done, we basically had the whole darn 6.4L wiring



At first blush, we thought we were looking at a common-rail 7.3L. But, no, it's actually a 6.4L Ford that has been swapped into the '99! The engine itself is surprisingly stock (including the crack-prone pistons), but with studs, valvetrain work, and a whole lot of fuel and air, it has no problem putting out an estimated 1,000 rwhp.

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THE HYBRID

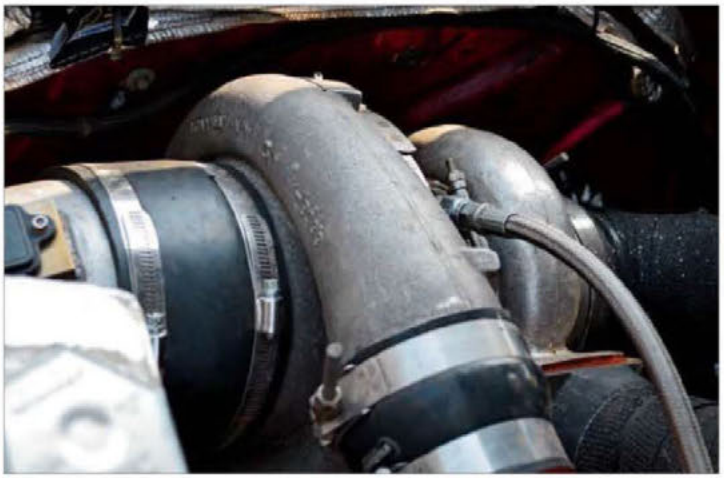
harness and sensors in there, from headlights to taillights." It turned out that in order for everything to function correctly, Dan and crew basically had to make the '99 think like a 6.4L-powered truck, from a wiring standpoint. This meant running all the wires, making provisions for sensors, and even installing the gauge cluster from the '08 into the ex-7.3L truck.

One area where Dan made a wiring exception was the transmission. Since he already knew how to build a 4R100 that could handle serious horsepower, that's what he did. Using a transmission case from a gas-powered rig, Dan put a 300M HD input shaft in the transmission, as well as a billet intermediate shaft. The valvebody was also modified with Dan's own personal tricks, and its shifting is operated by a PCS transmission controller. Finally, almost every part that wasn't aftermarket was sent out to be cryogenically treated for strength before it was installed.

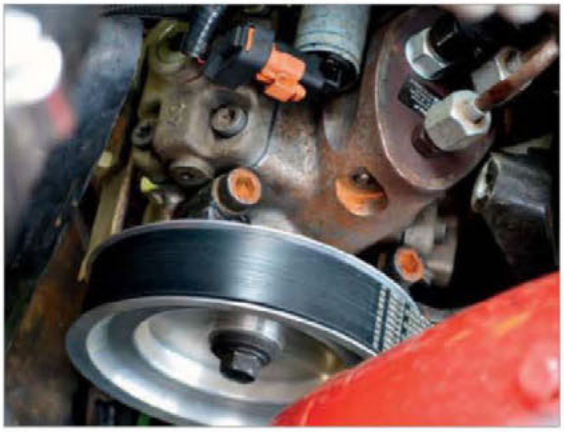
With racing season coming to a close, Dan knew he had to get the truck going before this year turned into next, so a bone-stock 6.4L short-block was installed as a placeholder, while a more modified short-block was being built. The upper end of the engine also received limited upgrades such as pushrods, valvesprings, and A1 Technologies head studs before the engine was installed in the truck.

The power-producing parts, however, are another story. Since the team would eventually be building an engine with coated pistons, aftermarket rods, and a slew of other upgrades, they wanted to ensure it made plenty of power. So Dan fabricated a turbo setup that would spool quickly yet still make plenty of power. The stock VGT was ditched, and a setup that features a 63.5mm S300 was added. Out front, a large GT47-frame 88mm Garrett was added as the atmospheric turbo and, when combined with the smaller

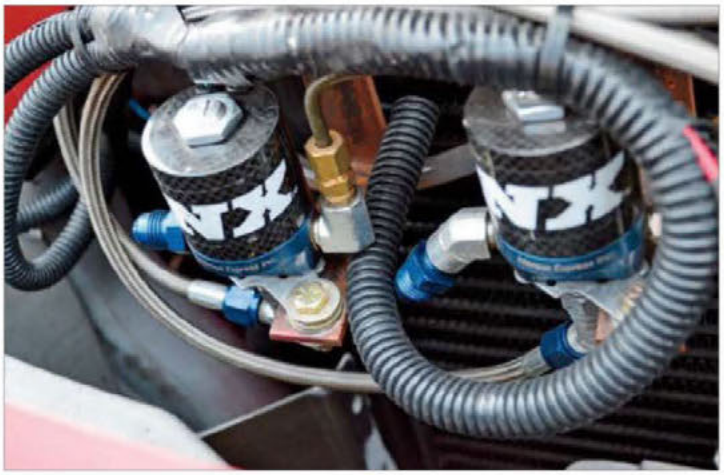
Thanks to the efficient nature of the common-rail diesel engine, the turbochargers required for this type of power are smaller than you might think. The setup consists of 6.0L up-pipes with a JGS 50mm wastegate. A custom turbo pedestal by Swamp's Diesel mounts a 63.5mm S300 turbo on top of the engine.



Compounding air into the smaller S300 is a Garrett GT4718R, which features an 87.8mm inducer and flows 140 lb-min of air. Both turbos combine to pressurize the 6.4L engine with a whopping 80 psi of boost.



Dan's truck was used as a testbed for a Swamp's dual K16 pump kit, which ensures rail pressure doesn't drop during a pass, even with the larger injector nozzles.



Although it hasn't been turned on yet, a Nitrous Express nitrous-oxide system will be available when the team gets serious about hitting single-digit times. The juice should provide anywhere from an additional 200 to 400 hp, depending on jetting.

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THE HYBRID

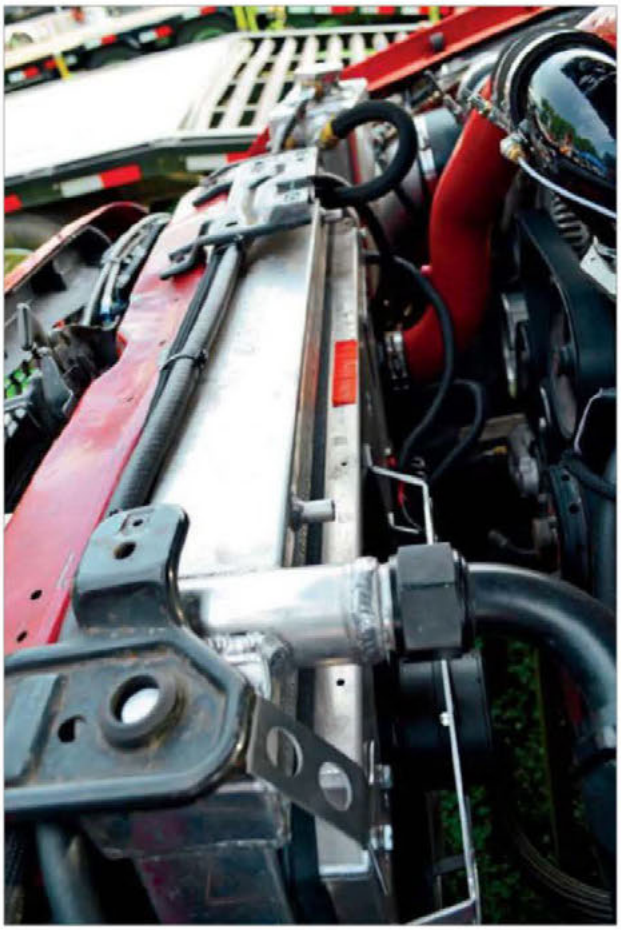
S300, can produce more than 80 psi of boost.

The truck's fuel system received equally aggressive modifications, with an AirDog II 150-gph lift pump feeding an Aeromotive A1000 second pusher pump, which increases the fuel pressure and then finally sends diesel to twin stock 6.4L high-pressure common-rail pumps. Those twin pumps then feed stock injectors with 100-percent-larger nozzles (by Swamp's Diesel Performance), which, when mated with the airflow, make the truck flat-out haul.

The rest of the truck is pretty simple and comprises your standard race vehicle fare. The interior is all business, with just a racing seat, switches, and gauges; a fuel cell in the bed has replaced the factory fuel tank. Everything that didn't need to be there was removed for weight reduction, and the stock steel wheels were replaced with lightweight Weld Racing aluminum wheels.

The tires are drag radials instead of normal street tires, and a unique four-bar rear end setup that still incorporates the factory leaf springs was made. Last but not least, a locker was installed in the 3.55-geared rear end to make sure the truck had enough traction to match its horsepower.

While it only has a few shakedown passes under its belt, Dan's F-250 is already one of the fastest Ford-powered, Ford-bodied



A Mishimoto aluminum radiator was installed on the truck, which reduces weight and facilitates speedy cool-downs between rounds.

FAST FACTS:

- **YEAR/MAKE/MODEL:** '99 Ford F-250
- **OWNER:** Swamp's Diesel Performance/David Armstrong, Dan Morin
- **HOMETOWN:** Laverne, Tennessee
- **ODOMETER:** 136,000 miles
- **ENGINE:** '08 6.4L V-8, stock rotating assembly, ported heads and intake manifold, Swamp's Diesel valvesprings and pushrods, A1 Technologies head studs
- **FUEL:** Swamp's Diesel 100-percent-over nozzles and twin K16 pumps, Aeromotive A1000, 12-gallon fuel cell, fuel cooler with fan, AirDog II 150-gph lift pump, Custom Innovative tuning
- **AIR:** 6.0L Ford exhaust manifolds to custom mount, 63.5mm Borg-Warner S300 turbo, 88mm Garrett GT4718R turbo, JGS Precision 50mm wastegate, 4- to 6-inch exhaust stack, custom intercooler
- **TRANSMISSION:** 4R100 automatic with PCS controller (built by Dan), Precision 3,000-rpm-stall converter, XHD billet input shaft, billet intermediate shaft, valvebody by Dan, cryogenic hardening of everything, flexplate, gas case
- **HORSEPOWER:** 1,000 hp (est.)
- **TORQUE:** 1,800 lb-ft (est.)
- **TIRES:** 390/40R17 M&H Racemaster
- **WHEELS:** 17x9-inch Weld Draglite
- **SUSPENSION:** Factory, with custom four-link bars
- **AXLES:** Ford 10.5-inch rear axle with 3.55:1 gears and a Detroit Locker, Dana 60 front axle
- **FUN FACT:** The Ford went from sitting on flat tires to a 10-second ride in just two and a half months.

Although it doesn't look like anything crazy, the flat-black intercooler was designed specifically for Swamp's Diesel's truck and can handle the 80-plus pounds of boost the turbos produce without splitting.

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THE HYBRID

We were surprised to see a factory-appearing gauge cluster in the truck, and then quickly picked up that it was from a 6.4L-powered truck. Dan says swapping the cluster over was the easiest way to get the computer to let the engine run without any issues.

In addition to the 6.4L instruments, a trio of gauges on top of the dash measures boost, water temperature, and exhaust gas temperature.

Down by the steering column are a second EGT gauge and a transmission temperature gauge Dan uses to make sure nothing's wrong with the 4R100 before he races.

The stock seats were ditched for a Corbeau racing seat, which is complemented by a five-point harness and a rollbar.

The fuel system on the 6.4L engine is quite unique. While Aeromotive's A1000 feeds the engine, an AirDog II 150-gph lift pump actually delivers fuel to the Aeromotive pump.

trucks out there. At a race weight of more than 6,000 pounds, it's already cut a 1.51-second 60-foot time, which turned into a best eighth-mile time of 6.55 seconds at 106 mph.

Dan plans to hit the quarter-mile soon, where he hopes for low 10s at more than 130 mph. Although his Ford's performance is already very impressive, Dan says he's looking to install the built motor and turn the nitrous bottle on for next season, with the hope of running some 9-second quarter-mile times. Whatever times this truck does turn, one thing is for sure: The 7.3L/6.4L Power Stroke hybrid will always draw a crowd wherever and whenever its hood goes up.

The wheels and tires are drag-race-ready, with an old set of discontinued (but lightweight) Weld Draglites playing host to 390/40R17 M&H Racemasters.

The original fuel tank was replaced by this fuel cell, which is lighter than the original tank—and is also safer.

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MEAN

JASON MERFELD'S HOMEBUILT 700HP DODGE

It's not often we run across a vehicle that's been modified in almost every single way, yet that's just what we found when we spotted Jason Merfeld's '98 Dodge Ram 2500. Even the most casual observer would of course notice the Line-X outer covering and aftermarket wheels sporting some serious Nitto Mud Grappler tires. You can't always judge a book by its cover, however, as the Line-X "paint" and other outer cues are just part of the story.

BY JASON SANDS ■ PHOTOS BY JASON SANDS

GREEN

MEAN GREEN

When Jason first found his '98 Dodge, it was far from his dream vehicle. It had a slight rust problem, and by "slight" we mean both fenders, the bed, hood, and tailgate were all junk. Undeterred by all the oxidation, Jason started collecting parts from junkyards, parts suppliers, and Craigslist. Over time, he was able to secure brand-new sheetmetal for the truck, including a hood from Diamond Standard Parts, and Stampede fender flares for the wheelwells. The bumpers are interesting, and when we asked Jason where he got them, he replied, "I didn't. A couple buddies and I made them!" This cool combination was then sanded down before Jason sprayed the whole truck with Synergy Green Line-X.

The powertrain in Jason's Ram has had its fair share of rebuilds and parts changes. However, it took the block being ruined by a tappet failure for Jason to finally bite the bullet and go for the full build. The engine

The 5.9L Cummins engine in Jason's Dodge survived more than 200,000 miles without a hiccup, until an errant lifter made its way through the engine and caused a wee bit of blow-by. Fortunately, Jason took this mishap in stride and opted for a full rebuild with large bowl pistons, a Hamilton Cams 188/220 grind, and numerous other modifications.

While the engine was torn apart, the P7100 injection pump was taken off, the barrels were racked, and it was benched, resulting in a whopping 800 cc of fuel maxed out. Internal goodies include full-cut delivery valves, 4,000-rpm springs from Dynomite Diesel Performance, and a Mack Rack plug.

Jason's Dodge has seen more than its fair share of turbo configurations, but its current setup is one of his favorite. A 62mm turbo from Industrial Injection is the high-pressure unit, which is fed by a 75mm S400. Maximum boost is 70 psi.

A large Spectre Racing air filter was incorporated into Jason's homebuilt compound-turbo system, which flows more than enough air to support the hungry S475.

Water injection is used to try and head off exhaust gas temperature troubles. A Snow Performance Stage 2 kit with two large 625ml nozzles is triggered as soon as the boost hits.

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itself was built with coated Mahle pistons and a Pure Diesel Power rebuild kit, and the short-block was machined and assembled by Berry Machine in Mason City, Iowa.

With the bottom end in good shape, the rest of the engine was assembled by Jason and good buddy Jeff Allen of For-Play Automotive in London, Minnesota. A Hamilton Cams 188/220 camshaft with retainer had already been installed, to which Jason added a set of Hamilton Cams pushrods and tappets, and a set of Industrial Injection 150-pound valvesprings. A new, stock head was purchased from Pure Diesel Power (as the old one was cracked) and was installed with a set of ARP 425 studs.

Jason also upped the horsepower game on his Cummins while it was apart. The injection pump was fitted with full-cut delivery valves and 4,000-rpm governor springs from Dynomite Diesel, as well as a Mack Rack plug and Tork Tek overflow valve. A local shop racked the

When the Dodge hits the pulls or local shows, a John Deere Green off-road wagon is paired with the truck for ice chest hauling around the pits.

Another interesting part of this Dodge is the bumpers, which are robust yet don't extend much past the body lines, offering a clean look. Unfortunately, there's no place you can buy them, as Jason and his buddies built them!

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MEAN GREEN

barrels and flowed the P7100 to the tune of a whopping 800 cc of fuel. At this point, Jason was on his third turbo, an Industrial Injection Phatshaft 62, which had been mounted with compounds in mind. With nothing but time on his hands while the engine was still in pieces, Jason decided to go with twins and mounted a 75mm S400 under the 62mm turbo. Like most of the truck, Jason built the piping kit with the help of friends, and then had it powdercoated.

The rest of the Dodge also received its fair share of upgrades. The NV4500 transmission was rebuilt for the rigors of sled pulling by Zumbrota Bearing & Gear, and a South Bend 3250 dual-disc clutch was placed between it and the hopped-up engine. Jason and his buddies also built the custom traction bars and fitted the truck with brand-new Moog suspension components and a Borgeson

When he was building his engine, Jason went with standard ARP studs, without fire rings or O-rings. Even with regular blasts up to 60 to 70 psi of boost, the head gasket has held just fine.

In addition to the body getting the Line-X treatment, the custom traction bars built for the rigors of sled pulling got sprayed as well.

Since the Ram 2500 sees regular sled pulling action, safety devices like driveshaft loops or these traction bar safety cables are found throughout the truck.

FAST FACTS

- **YEAR/MAKE/MODEL:** '98 Dodge Ram 2500
- **OWNER:** Jason Merfeld ■ **HOMETOWN:** Mason City, Iowa
- **ODOMETER:** 264,000 miles
- **ENGINE:** 5.9L Cummins inline-six; Mahle Industrial pistons; 188/220 Hamilton Cams camshaft, retainer, tappets, and pushrods; Industrial Injection 150-pound valvesprings; ARP 425 head studs; Fluidampr harmonic balancer
- **FUEL:** Dynomite Diesel Performance 90hp injectors, 4,000-rpm governor spring kit, full-cut delivery valves, barrels racked, 25 degree timing, Mack Rack plug, Tork Teknology 060 overflow valve, FASS 220-gph lift pump with Sinster Diesel fuel sump, Snow Performance Stage 2 water-methanol injection
- **AIR:** Homebuilt compound turbos using an Industrial Injection Phatshaft 62/70, s475 with 1.32 A/R
- **TRANSMISSION:** NV4500 rebuilt by Zumbrota Bearing & Gear, South Bend 3250 clutch
- **HORSEPOWER:** 600 to 700 hp (est.)
- **TORQUE:** 1,300 to 1,400 lb-ft (est.)

- **TIRES:** 35x12.50 Nitto Mud Grapplers
- **WHEELS:** 18x9 Ballistic Jesters
- **SUSPENSION:** 2½-inch front leveling kit, Airlift 5000 airbags, traction bars (homebuilt), Borgeson steering box
- **AXLES:** 3.55 with Detroit Truetrac locker
- **BODY:** Truck was sprayed with Line-X (Synergy Green Effect), homemade bumpers, smoked lights, badges from Billet Badges, Stampede fender flares, cab is fully layered with DynaMat
- **INTERIOR:** Auto Meter boost and pyro gauges, Ruff Tuff leather seat covers
- **FUN FACT:** It took Jason three clutches, four turbos, and two engines to get to this point.

The first thing most people notice is the cool, green, Line-X coating on Jason's Ram that protects it from most...well, most everything. The custom badges are from billetbadges.com.

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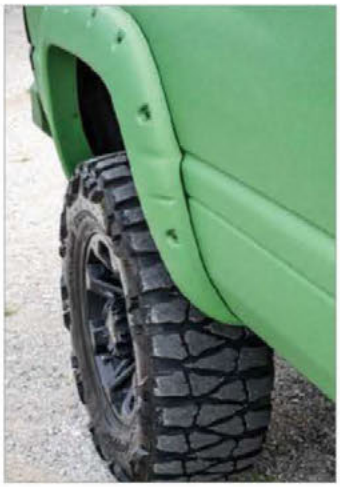
quick-ratio steering box. Finally, the entire inside of the truck was layered with Dynamat to keep the interior as quiet as possible.

With the truck in ready-to-show shape, Jason made his way to the Scheid Diesel Extravaganza in Terre Haute, Indiana, which is where we spotted it. The more questions we asked, the more we realized just how extensive the rebuild and performance modifications were—and that the truck isn't just a Line-X spray job. The fact that this truck also hauls the mail with 70 psi of boost and an estimated 700 hp didn't hurt, either, or that it has seen its fair share of sled pulls.

Jason says he's mostly done with the build at this point and that a switch to a 3850 clutch is on the list (so he can pull in Fourth gear, low-range). Slightly bigger turbos are the only other future modifications he's contemplating. Whether the Ram stays the same or again gets more horsepower, we can definitely say all of Jason's hard work on the truck has really paid off.



Jason also added Stampede fender flares to the body, for looks—and to clear his oversize wheel and tire combination.

The aggressive wheels and tires complement the rugged Line-X look of the truck. Four 35x12.50R18 Nitto Mud Grapplers are mounted on 18x9-inch Jesters from Ballistic Wheels.

With no need for a transmission temperature gauge, a simple two-gauge A-pillar setup was incorporated into the interior, which houses boost and EGT gauges.

A high-output FASS 220-gph lift pump is used to feed the high-flowing injection pump. To compensate for any quarter-tank issues, a fuel sump from Sinister Diesel was added to the original fuel tank.

The exhaust is an interesting story. When an 8-inch stack got a little loud, Jason cut it up and made a 5-inch downpipe-back rear-exit setup for his compound turbos, which ends in the stack's original 8-inch tip.

Behind the Mag-Hytec differential cover lies a Detroit Truetrac helical gear positraction, which acts like an open differential around corners and a locker in a straight line.

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BY MIKE MCGLOTHLIN ■ PHOTOS BY MIKE MCGLOTHLIN

ALL BUSINESS

BLACK-ON-BLACK, COMPOUND TURBOS, 750 HP

For a lot of us, the diesel addiction came naturally. For others, it developed over time. John Zibutis, a former mini-truck and street-bike enthusiast, fell into the latter category. He started to take an interest in diesel trucks roughly eight years ago, when oil burners began to explode with popularity. "I got into diesels once the trucks rode better, actually made power, and GM built an engine that didn't have a ton of problems," he told us. He then quickly added, "But I never thought I would go this far with my Duramax."

Believe it or not, the '06 GMC Sierra 2500HD you see before you was pampered the first 36,000 miles of its life, and John's father was its second owner. But after his father lost his bout with cancer in 2008, the keys were left to John—so it goes without saying that there is a lot of sentimental value involved with this ultra-clean GMC.

ALL BUSINESS

The 6.6L LBZ Duramax resting in John Zibutis' '06 GMC Sierra is far from stock. A Fleece Performance Engineering short-block houses forged-steel Carrillo rods, Mahle cast-aluminum (and coated) 16.5:1 compression pistons, and a SoCal Diesel 3388 cam. Top end mods were performed by Flynn's Shop, where double-spring valvesprings from Diesel Technology Source and Custom Age ARP head studs were utilized.

While an Edge Juice with Attitude programmer (uploaded with the Hot Unlock tune, of course) proved fun and put the truck at the 460hp level at the rear wheels, John wanted more out of his GMC's 6.6L LBZ engine. Taking the advice of his friends, he bit the bullet and tackled the unavoidable job of fortifying the Allison 1000 automatic transmission before adding big power. For the bulletproof build, he took the truck to Flynn's Shop in Alexander, Illinois, where the six-speed automatic was fitted with a GMax 6-pac clutch kit, a TransGo shift kit, and a 1058 torque converter from SunCoast. For added insurance, a pump rub kit and transfer case brace from Merchant Automotive were also installed.

With the slushbox complete, it was full steam ahead on the engine. A set of Exergy Engineering injectors with 60-percent-over nozzles replaced the stockers, the factory CP3 injection pump was pulled and transformed into a 10mm stroker pump at Motorsport Diesel, and a 68mm Cheetah turbocharger from Fleece Performance Engineering was added. ARP 2000 head studs would also be threaded in one at a time to keep the heads from lifting.

Knowing he was playing with fire at the 650hp mark (where the LBZ's factory pistons are known to crack), John pressed on, adding a stock-over-S475 twin-turbo kit from Duramaxtuner.com. A few thousand miles later, the

An 80mm S400 (S480) serves as the atmospheric turbocharger in the compound arrangement found under the hood. The top-notch compound-turbo system came from Wehrli Custom Fabrication in Sugar Grove, Illinois.

"I never thought I would go this far with my Duramax."

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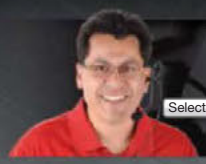

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Shortly after our interview, we found John and his truck doing this. At roughly 7,200 pounds, a 92-mph trap speed in the eighth-mile confirms this nasty GMC is making at least 750 hp at the wheels.

Sitting in the factory turbo's location is a 68mm, Stage 2 Garrett PowerMax. The variable-geometry GT4094VA charger is responsible for getting things started at low rpm (before the big S480 begins to stir). Both turbos combine to make a little less than 70 psi of boost at full tilt.

inevitable occurred: a cylinder misfire and white smoke billowing from the tailpipe. However, instead of throwing in the towel, John decided to go all out and contacted Fleece Performance for a built short-block. The competition-ready bottom end consists of Carrillo rods, Mahle coated pistons, and a SoCal Diesel camshaft. The cam, crankshaft, and water pump are all keyed. Flynn's Shop took over the assembly from there, fitting the heads with Diesel Technology Source valves-springs and securing them to the block with Custom Age ARP studs.

Also going bigger in the fuel and air department during the rebuild, John had Flynn's upsize the compound-turbo arrangement considerably with a 220-gph Titanium Series fuel system from FASS. Replacing the factory Garrett 'charger in the valley is a 68mm PowerMax (GT4094VA), while an S480 now resides where the S475 used to.

John had all intercooler plumbing powdercoated gloss black to keep with the truck's black-on-black theme.

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ALLBUSINESS

All turbo plumbing came from Wehrli Custom Fabrication. The EFILive gurus at Duramaxtuner.com dialed in both the ECM and TCM, which makes for an exceptionally clean, fun-to-drive truck on the street.

While John has indulged in several different gearhead-type hobbies over the years, we think his passion for diesels is here to stay. Case in point: He's already drawing up plans to make more horsepower this winter. His wish list includes dual CP3s, 100-percent-over injector nozzles, EFILive tuning, and at least 850 hp at the wheels—and John is the kind of guy who always gets what he wants.

A FASS fuel sump kit was installed in the factory tank to rule out any low fuel issues through the pickup and allow fuel to gravity feed to the lift pump.

Well before John's quest for power got out of hand, he addressed the six-speed Allison 1000. With the help of Flynn's Shop, a GMax 6-pac kit, TransGo shift kit, and 1058 torque converter from SunCoast were installed. From there, the commercial-grade automatic was ready to handle big torque and horsepower.

Keeping the rear planted is a set of One Up Offroad's short-gusset traction bars. One Up's bars are well known throughout the industry for being unmatched in functionality, performance, and reliability.

FAST FACTS:

- **YEAR/MAKE/MODEL:** '06 GMC Sierra 2500HD
- **OWNER:** John Zibutis
- **HOMETOWN:** Sherman, Illinois
- **ODOMETER:** 52,000 miles
- **ENGINE:** 6.6L Duramax LBZ, forged Carrillo rods, cast-aluminum Mahle (coated) pistons, SoCal Diesel 3388 cam, Diesel Technology Source valvesprings, ARP Custom Age head studs
- **FUEL:** FASS Titanium Series 220-gph fuel system, FASS fuel sump, Motorsport Diesel 10mm stroker CP3 injection pump, Exergy Engineering 60-percent-over injectors
- **AIR:** GT4094VA/S480 compound turbochargers with Wehrli Custom Fabrication plumbing
- **TRANSMISSION:** Allison 1000 automatic built by Flynn's Shop with SunCoast GMax 6-pac, TransGo shift kit, and SunCoast 1058 torque converter
- **HORSEPOWER:** 750 hp (track)
- **TIRES:** 305/50R20 Nitto NT420S
- **WHEELS:** 20x10-inch BMF Novakane
- **SUSPENSION/STEERING:** Exaxt chromoly tie rods, pitman and idler arms, and centerlink

A ½-inch fuel supply line connects directly to a 220-gph Titanium series FASS system. From there, a constant 15 psi of fuel is sent to a 10mm stroker CP3 pump from Motorsport Diesel.

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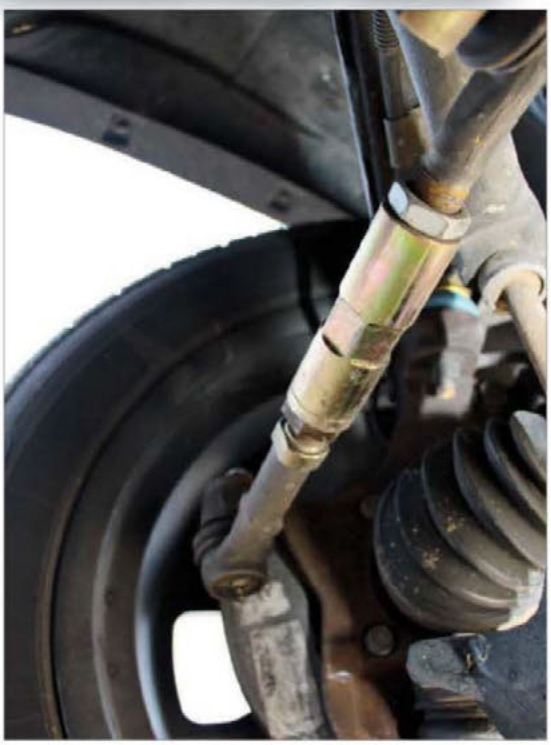

These burly, chromoly tie rods came from Exaxt out of Canada. Other bulletproof parts added to the IFS front end include Exaxt pitman and idler arms, as well as a practically indestructible 1.75-inch-diameter chromoly centerlink.

Inside, the driver and passengers are treated to Katzkin leather seats and one of the cleanest interiors we've ever seen. Like so many other diesel owners, John relies on an Edge CTS monitor mounted on the dash to keep an eye on all the typical powertrain necessities. Two Auto Meter Ultra-Lite II series gauges were sourced from Randall's Performance and installed along the A-pillar to keep tabs on boost and EGT.

A DSP5 switch hidden under the dash allows John to flip through an assortment of custom EFILive tunes on the fly. Duramaxtuner.com's Nick Priegnitz is responsible for the truck's solid horsepower numbers, its firm yet smooth shifting, and how civilized the Sierra is on the street. DP

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We're willing to bet good money that all diesel truck owners (or car owners, for that matter) worth their salt as hard-core enthusiasts always have a fair amount of honest concern about the performance of their vehicle's drivetrain (engine, transmission, and such).

Let's face it. For many of us—especially truck owners—our rigs are often used for making a living. Or, in some cases, our good ol' diesels are simply a mode of transportation in one breath, and then called on for drag racing, sled pulling, dynoing, or displaying at a show, in another.

Having the ability to know exactly what's going on with a diesel truck's mechanical systems is definitely one of the keys to preserving that truck's longevity. Although problems aren't usually investigated until they actually occur, knowing what's going on with your rig and being in front of potential crises is a good way to ensure it remains in proper running condition at all times.

No, there isn't any crystal ball that can provide such diagnostics, and getting to the bottom of these matters has long been the job for the diesel mechanics we trust. However, for the '07 to '13 GMT900 platform (Chevrolet Silverado/GMC Sierra 2500HD and 3500HD), Palmer Performance Engineering has developed a neat little tool we think might be the next best thing to having a set of tell-all tarot cards for a Duramax-powered rig.

Palmer's new DashLogic (PN DL1045U; $249.95) is a small,

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easy-to-use, customizable device that plugs into a truck's onboard diagnostics II (OBD-II) port and monitors all (and when we say *all*, we mean *all*) of the parameters in the OBD-II system, and presents the data through a truck's Driver Information Center (the message area in the instrument panel, between the speedometer and tachometer).

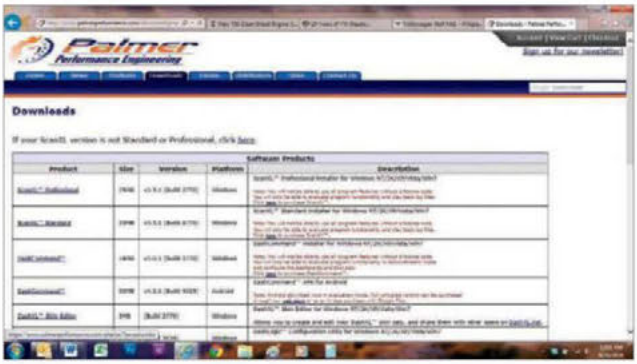
Want to know your truck's coolant temperature? The turbocharger's boost output, or something off the beaten path like its calculated fuel-flow rate...or the speed of only one wheel? This small device makes it possible to see these values and more—and it does so while you're driving.

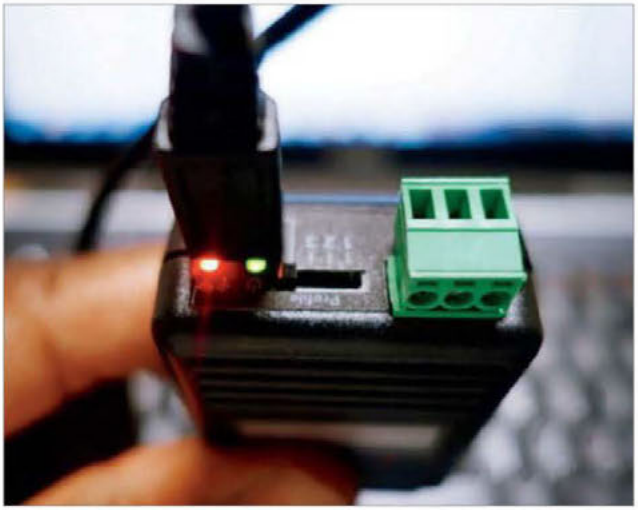
As Eddie Rios of Addiction Motorsports in Canoga Park, California, told us when he saw what DashLogic can do, "It's a pretty cool tool!" That's a pro's take, and we definitely agree. However, DashLogic is not only for use by technicians. Duramax owner-enthusiasts can also use the tool to monitor their '07 to '13's critical drivetrain data.

To demonstrate this, we asked our friend, Artis Houston, to give DashLogic a try on his stock '09 Chevy Silverado 2500HD. The following photos and captions detail highlights of our test.

Our test vehicle is Artis Houston's '09 Chevrolet Silverado 2500HD, powered by a 6.6L LMM Duramax engine. The bone-stock truck is used primarily for towing Artis' enclosed race car trailer, shuttling race engines and parts to and fro, and also for general transportation each day. We asked Artis to set up Palmer Performance Engineering's DashLogic to capture and display (in real time, via the truck's Driver Information Center) OBD-II parameter information that would be useful while towing his enclosed trailer.

This is the very simple DashLogic system, highlighted by the plug-in, OBD-II module and a micro-USB cable. A laptop loaded with Microsoft Windows is required for customizing DashLogic but not included in the kit.





Programming DashLogic starts with downloading a configuration tool for the device from Palmer's website, and then using the tool's Profile switch to select "CONFIG." After connecting the module to a computer using the supplied micro-USB cable, green and red LEDs illuminate and confirm power is sufficient and DashLogic-to-computer connectivity is solid.

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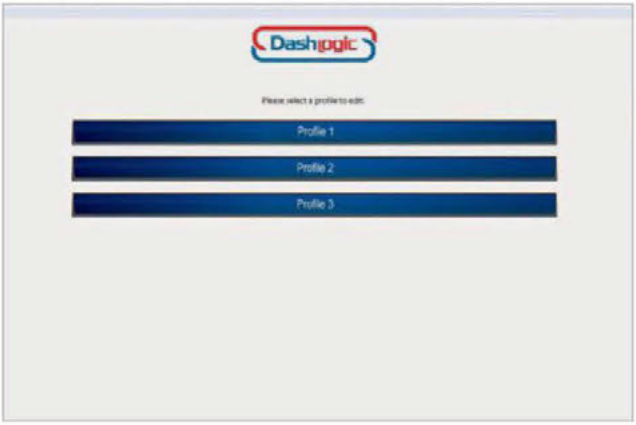
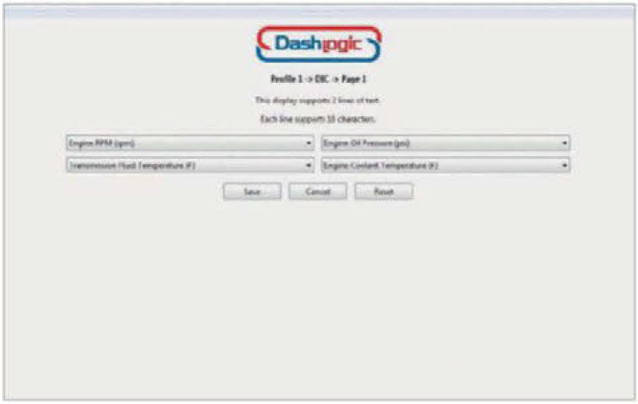


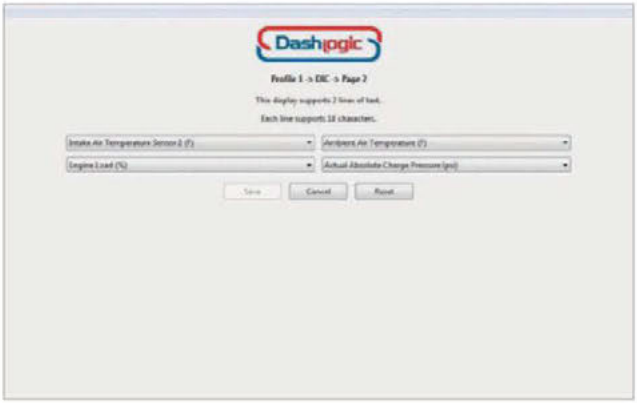
With the device communicating with the configuration software, there are three menus to shuffle through in order to create a Driver Information Center (DIC) profile, which is the feature we focused on for our quick test. The first point of entry is the Profile screen. When selecting a Profile, the switch on the device must correspond with the Profile (1, 2, or 3) that is being configured.

The Profile menu is the access point for the Driver Information Center, and four additional features. In addition to presenting OBD-II parameter identifiers (PIDs), DashLogic also allows you to program as many as eight alarms in each Profile. The alarms can be set up to flash custom warning messages (low oil pressure, excessive speed, and so on) and sound audible alerts to make drivers aware of problems or abnormalities. PIDs can also be customized with unique names.

Profiles can be created with as many as eight pages that accept four data entries per page (a total of 32 data entries per Profile).



Here's a shot of a DashLogic Driver Information Center configuration screen. It's Page 1 of Profile 1 for Artis' '09 Silverado 2500HD: engine rpm, oil pressure, transmission fluid temperature, and coolant temperature are the selections that were made from the pull-down menu of PIDs.



We actually went five pages deep with the Profile. This is Page 2.

DashLogic simply plugs directly into an '07 to '13 GMT900's OBD-II port. A green LED illuminates when the unit is functioning. Two 0- to 5-volt analog inputs allow you to add and monitor the data of as many as two aftermarket sensors (the device allows users to create Calculation PIDs for the sensors). Removing the unit is as simple as pulling it out of the port. All factory settings remain intact, and the DIC profiles, alerts, and such that are programmed in DashLogic stay locked in the device.

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This is how data actually appears on screen in the 2500HD's Driver Information Center. The values from the first page of the DIC Profile 1 Artis created are accurate and clearly displayed in real time as the Duramax engine idles.

Toggling forward from Page 1 to Page 7 of display data is done by pressing the door "lock" switch (the display cannot be cycled backward). The power locks will still function normally, and changing the pages can be done while the truck is moving. For safety purposes, DashLogic does not use the "unlock" button. As you see in this photo, the inlet-air temperature, ambient-air temperature, engine load percentage, and absolute charge pressure are perfectly in sync with the values Artis plugged into the second page of Profile 1.

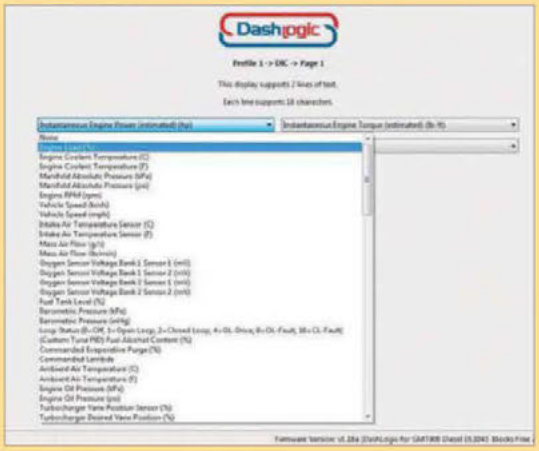
Of course, most performance nuts are interested in knowing how much horsepower and torque their truck's engine is putting out (the example here is our test rig's power/torque output with the engine running at idle). DashLogic is capable of calculating estimated amounts of both (at the crankshaft), speed-over-distance, distance-over-time, barometric pressure, and a multitude of other data values, which can all be stored in three fully customizable Profiles (each Profile has eight individual pages that support four unique PID selections).

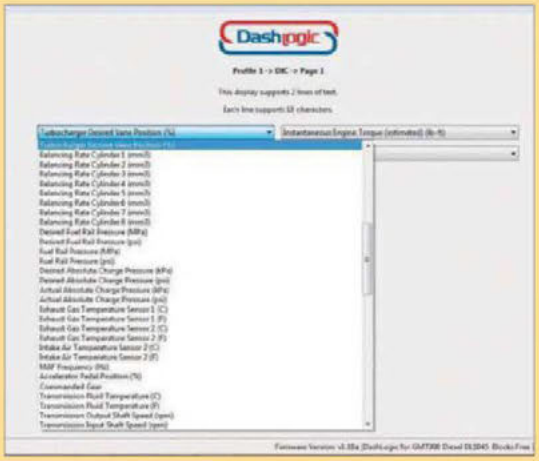
PIDs FOR THE PICKIN'

Since 1996, all light-duty cars and trucks (weighing less than 8,500 pounds) are required to support OBD-II diagnostics. The same rule has been in effect for medium-duty vehicles (8,500 to 14,000 pounds)—trucks, for the most part—since 2005.

The vehicles must use a standardized data-link connector and a subset of the SAE J1979- or SAE J1939-defined (as applicable for medium-/heavy-duty vehicles) parameter identifiers (PIDs), primarily for state-mandated emissions inspections.

DashLogic features a library of 108 standard (for example, the SAE standard for rpm is PID #12) and '07 to '13 GMT900-specific PIDS that can be selected from pull-down menus in each Page screen and used for creating custom info displays and alarms. The screen captures represent a small sample of the 108 PIDs that are available.





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BY TREVOR REED ■ PHOTOS BY TREVOR REED AND VINCE VALDIVIA

When we saw this '03 Ford F-350 at our local mechanic's shop, Vince's Automotive in Reseda, California, we wondered what was going on. The owner of the truck, Alan Morales, said he started seeing white smoke coming from the tailpipe at just 55,000 miles. Instead of waiting for the problem to get worse and possibly leave him stranded, Alan brought the truck to Vince Valdivia, who has been providing dealership-level service in the San Fernando Valley since 1981.

SAVING A 6.0L

UPGRADES TO KEEP THE TOW TRUCK AWAY

The 6.0L Ford Power Stroke engine has developed a bit of a bad reputation, but with some strategic upgrades, you can put a lot of fears to rest. Some of the most common 6.0L failures we hear about involve the exhaust gas recirculation (EGR) system and the engine oil cooler. Unfortunately, neither of these parts is easy to access. Companies such as Bullet Proof Diesel have upgrades designed to specifically address weaknesses that can cause the factory parts to fail. Here's how the crew at Vince's Automotive in Reseda, California, recently helped a diesel owner avoid some major downtime in his lifted '03 Ford F-350 by diagnosing some common 6.0L problems and then beefing-up the EGR and fixing the oil coolant system.

SHOWING SYMPTOMS

The owner of this truck, Alan Morales, started noticing some hints of white smoke coming from his tailpipe when the truck had just 55,000 miles on the odometer. Alan bought the truck new and had made some performance upgrades, including a K&N cold-air intake, along with a programmer, intercooler system, intake manifold, and exhaust by Banks Power. Alan admits to having a heavy throttle foot, so it wasn't a big surprise when the 6.0L engine started showing signs of strain. Luckily, he got the truck into the shop for a checkup before the wisps of white smoke turned into a cloud around a lifted pickup stuck on the side of the highway.

THE DIAGNOSIS

White smoke and low coolant levels are signs antifreeze is making its way into the engine's cylinders—where it doesn't belong. On many vehicles, this is an indication of head gasket failure, but with the 6.0L Power Stroke engine, it often means the EGR has developed internal cracks that are allowing coolant into the exhaust that is

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re-burned by the engine. Removing the EGR valve revealed it was not gummed-up, but the team at Bullet Proof Diesel points out that the EGR valve can actually look "steam cleaned" when enough coolant is invading the EGR system.

The oil cooler in the 6.0L engine can also be a source of problems because it has to deal with the oil heated by the HPOP, which supplies the high-pressure oil needed to operate the injectors. Unlike a common-rail-fueled engine (which injects fuel that's already under high pressures), the 6.0L engine uses engine oil to pressurize the fuel inside the injectors. The oil cooler has to deal with the heat that's added by this process and often reveals itself as a weak link in the 6.0L setup. In addition to dealing with the high temperatures, the oil cooler utilizes small internal passageways that can become clogged with particles in the coolant and oil, which can often lead to failure as early as 50,000 miles. This restriction can be the root of many problems experienced by 6.0L owners.

THE TREATMENT

It was determined that both the EGR cooler and the oil cooler needed to be replaced to keep this 6.0L engine running reliably. Bullet Proof Diesel's upgraded EGR cooler and a Ford replacement oil cooler were ordered to help make that happen. The EGR cooler is a street-legal unit that's a big upgrade from stock and designed to work with everything from a factory engine computer to a high-horsepower programmer without triggering engine trouble codes. The oil cooler is a direct-replacement unit that will help the truck work like new again. With both parts in place, the truck should stop blowing white smoke and, more importantly, it should no longer be prone to a massive failure. Here's how the crew at Vince's Automotive helped save this 6.0L Power Stroke by fixing some common problems before they could cause an inconvenient breakdown.

While Alan's 6.0L does not have a wild assortment of upgrades like those we see at the Diesel Power Challenge, it's definitely not stock. This Super Duty is equipped with a Banks Six-Gun programmer designed to add up to 138 hp and 231 lb-ft, along with upgrades to the intake, intercooler, and exhaust systems. Alan admitted he's not easy on the throttle, but he was disappointed to have the stock parts fail at just 55,000 miles. He even told us, "Don't ever buy a 6.0L," after seeing his truck when it was taken apart halfway through the repair. He says he no longer feels that way about the 6.0L and is happy with the truck now that it's back to full power and running strong.

To get to the EGR cooler and oil cooler, the turbocharger has to be taken out. Certified ASE Master Technician Carlos A. Escobar says he's removed 50 to 60 turbos during his career as a diesel technician, so he knows the routine by heart, and we watched him go through a mental checklist before each step. Vince is also a Certified ASE Master Technician, and he requires certification for all of his employees because he believes, "professional education and certification are essential to making complete and successful repairs that are done right the first time."

Once the turbo, fuel injection control module (FICM), intercooler tubes, and intake elbow were removed, Carlos was able to take out the intake manifold and the oil filter housing. The intake had a lot of buildup from the EGR system and the EGR cooler failure, so Carlos cleaned it using an environmentally friendly Safety-Kleen Aqueous Parts Washer. After the bath, the parts look good as new and can be fully inspected for any potential problems.

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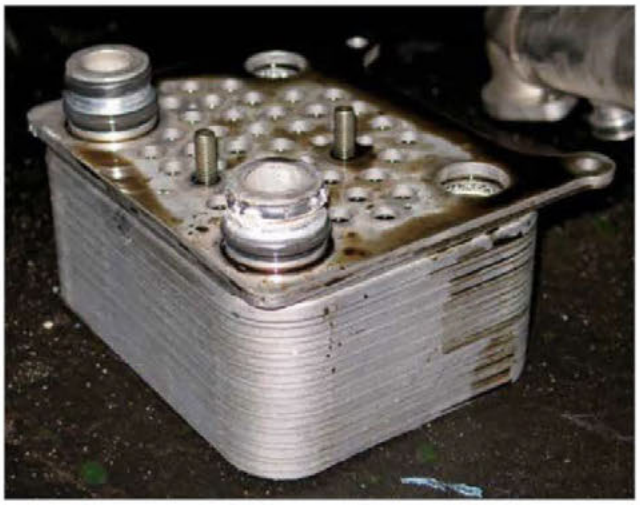

A rubber mallet was used to free the defective oil cooler from the oil filter base. Once it was removed, suspicions were confirmed that the original oil cooler had become clogged. Buildup of cooked coolant is a sign the oil cooler has become plugged and is not flowing as it should. The 6.0L engine setup is hard on the oil, so it needs to be changed regularly, and adding an aftermarket oil filtration system is not a bad idea.

Coolant inside the exhaust sections of the EGR revealed that the cooler had failed. Exhaust travels through the tubes inside the cooler and is supposed to be surrounded by constantly flowing coolant. It's possible that the blockages in the oil cooler led to the demise of the EGR cooler by preventing it from getting a steady flow of antifreeze. When this happens, coolant that does make it into the EGR cooler can boil instantly and cause pressures that break the internal passageways and allow coolant into the intake manifold. Catastrophic failure of the EGR cooler can lead to blown head gaskets or even a cracked engine block and heads, so don't skip scheduled coolant changes or you may have to pay for it later.

The EGR cooler by Bullet Proof Diesel is designed to be much stronger than the factory unit and fit directly into the stock location without any modifications. As you can see in the post-installation photo, the EGR cooler is supplied with coolant that has already traveled through the oil cooler (arrows), which is why both need to be in good working condition to prevent failures. BPD suggests using silicone sealer on the EGR intake gasket to prevent small exhaust leaks.

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The oil cooler used in this installation is a Ford factory part. Bullet Proof Diesel sells this stock part but also sells an oil cooler kit that uses an oil transfer block and an auxiliary cooler that bypasses the factory design for extended longevity. Once installed, the factory replacement oil cooler cannot be seen because it mounts below the oil filter base.

With the new EGR cooler and oil cooler in place, the intake manifold is installed and the turbo is cleaned in preparation for reinstallation. BPD says the factory turbo mounting bolts should not be reused because the company has seen too many 6.0Ls with loose or missing bolts, which can allow the turbo to shake and become damaged. The team at BPD also suggests getting all band clamps in place and exhaust up-pipe and down-pipe parts aligned before everything is torqued to factory specifications. This assures everything will fit properly and stay together under high pressures.

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The EGR valve controls the amount of exhaust that is diverted from the EGR cooler and into the intake manifold to be re-burned by the engine. Carlos points out where he often sees buildup on the valve before it's cleaned and reinstalled. While a gummed-up valve can be a sign of coolant leaks in the EGR system, the team at BPD points out that when the EGR valve looks "steam-cleaned" that can be evidence that large amounts of hot coolant are traveling through the system and into the engine. Low coolant levels should be a warning to 6.0L owners that the EGR and oil cooler systems may be compromised.

After the turbo and intake manifold were replaced, Carlos cleaned out the intake elbow and intercooler tubes before reinstallation. While torquing the intake elbow in place, Carlos makes sure to tighten down the studs in multiple passes to make sure it sits properly.

While putting the intake system back together, Carlos found evidence of a previous repair to the positive crankcase ventilation (PCV) tube. Apparently, someone at another shop used some tubing and plastic glue to try and fix a broken fitting (arrow). Carlos decided to order a new part from the local Ford dealership to assure this small issue would not become a liability and cause problems in the future.

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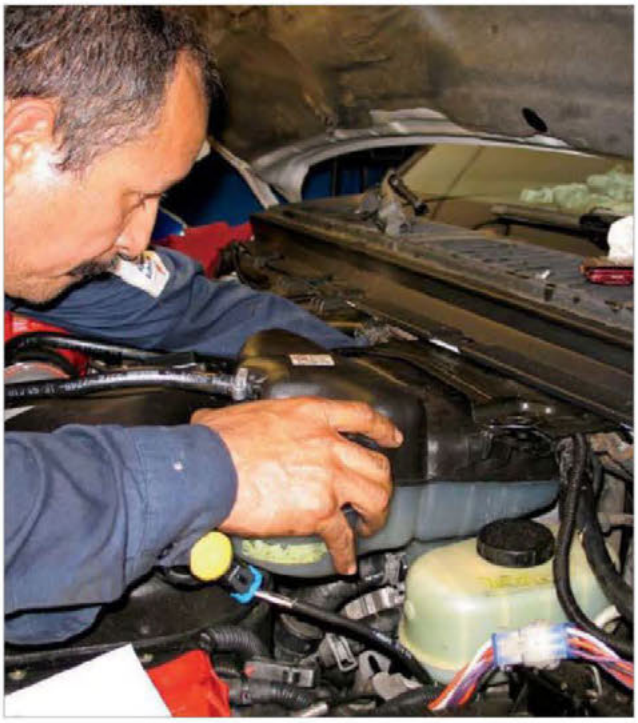
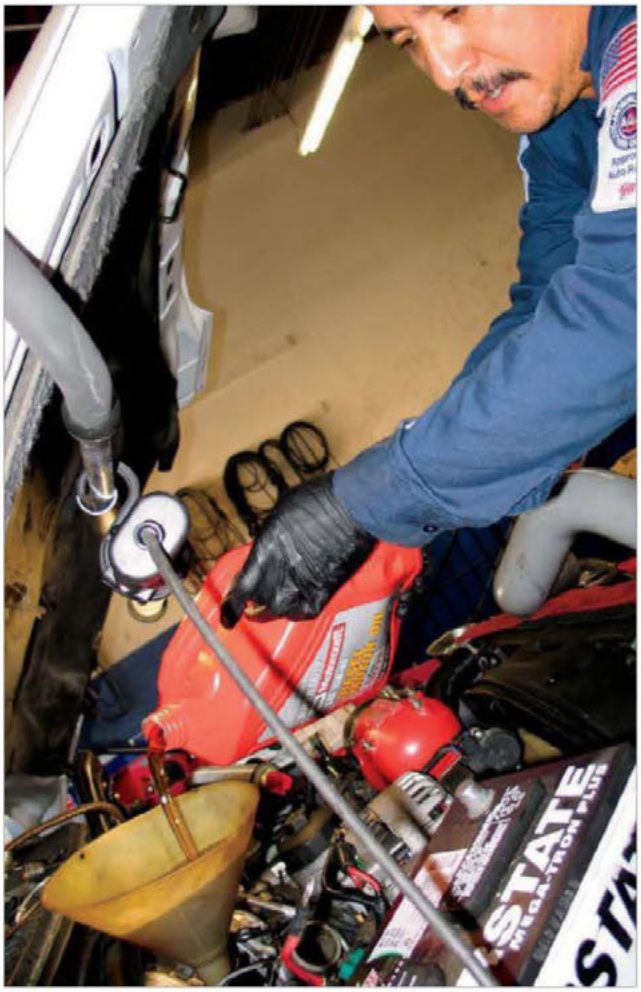


Carlos says getting the coolant degas bottle to sit properly is not easy but is very important. The tab at the bottom can be hard to get into place and Carlos says he's seen far too many trucks with this part not fully installed after a repair. Although at first it seemed to be properly situated, Carlos' experience with Ford diesels allowed him to see the bottle just wasn't sitting correctly. He removed the degas bottle and tried again, clamping everything down once it all fit snugly and he was satisfied.

When Carlos went to replace the fuel filter, he noticed a problem. The parts supplier had sent the wrong part (left). While it looked to be the same size and actually fit inside the fuel filter assembly, the internal mounting tabs were not the same and the filter did not sit properly. Carlos requested a new part, and this time the right one was delivered and then installed.



The oil and coolant for the engine were drained before any of the repairs took place. The oil filter was changed and everything was refilled before Carlos began cranking the engine. Once the fluids were replaced, Carlos ran the truck for about 30 minutes to make sure all the fluids and fuel were properly circulating before a testdrive.

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The last step of the repair process is taking the truck for a testdrive to make sure it's working properly. After just a couple of blocks, Carlos realized the truck was not making power as it should or, as Carlos put it, "no huevos syndrome." A shop computer with Ford's Integrated Diagnostic Software program was hooked up and revealed the variable vanes in the variable-geometry turbocharger were not operating. A quick look at the plug for the VGT control showed it was cracked and not making a good connection. A new part was ordered and Carlos installed it so the owner could have his truck back in time for the weekend.

Sources

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BY JASON SANDS ■ PHOTOS BY JASON SANDS

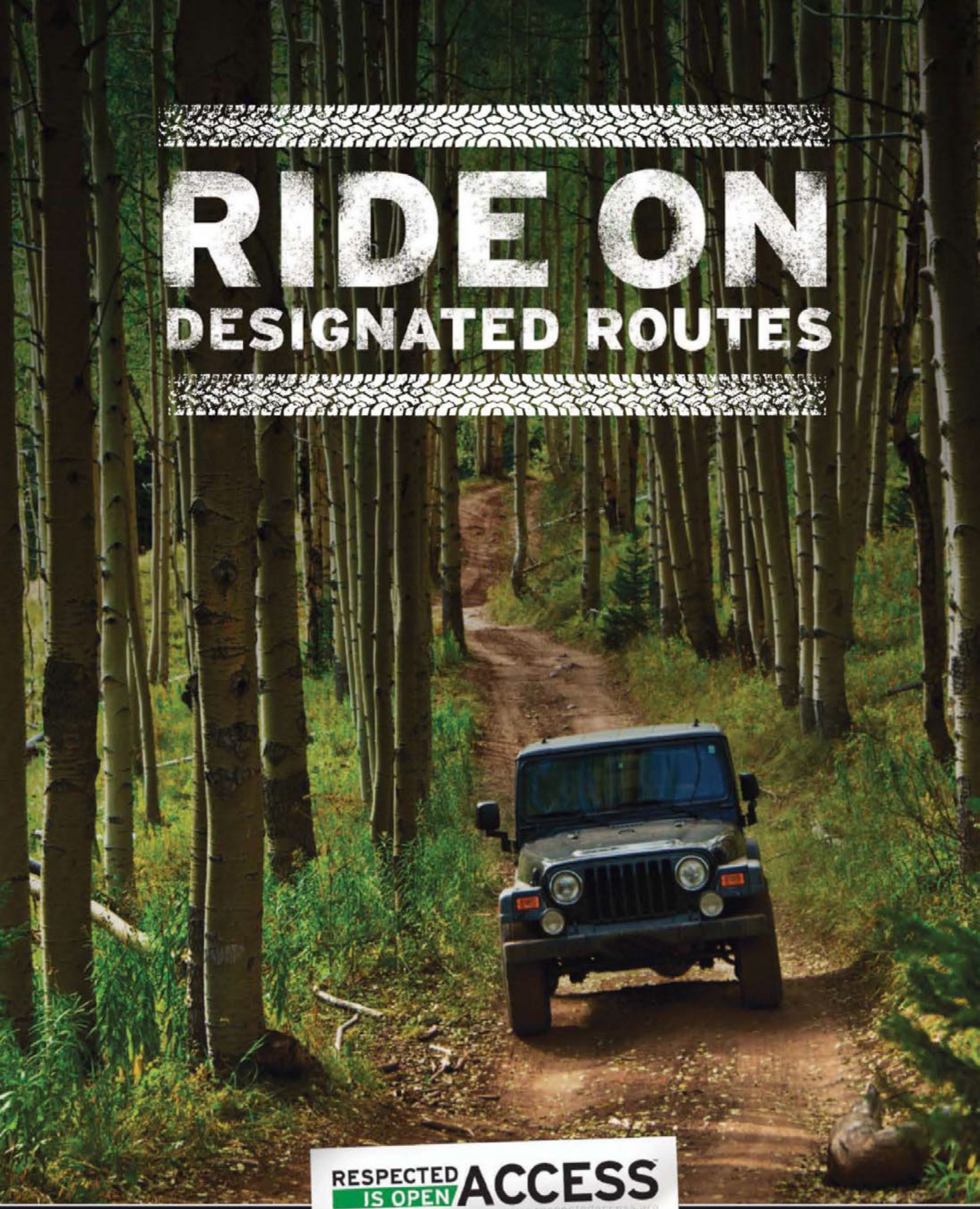
DRIVEWAY RADIATOR UPGRADE

INSTALLING AN ALL-ALUMINUM MISHIMOTO RADIATOR WITH BASIC HANDTOOLS

If you're wondering why you haven't heard about Project Triple Threat, our '95 Dodge Ram project, it's because we're pretty happy with the truck. It runs low 12s at the dragstrip, has made 600 hp on two separate dynamometers, and is still tame enough to drive on a daily basis. Recently, however, we ran into a problem: overheating.

With compound turbochargers, we could tow a trailer at nearly 400 hp—a power level that severely overtaxed the factory cooling system, which was only rated to support 160 hp. What's worse, with the air conditioning on, temps sometimes climbed as high as 220-plus degrees, just from sitting in traffic on a 100-degree day (and kept climbing until we got up to speed, or put the truck in neutral and raised the engine speed to about 1,500 rpm).

The first step of our driveway radiator install is to drain the coolant out of the factory radiator, which is done by using the petcock at the bottom.



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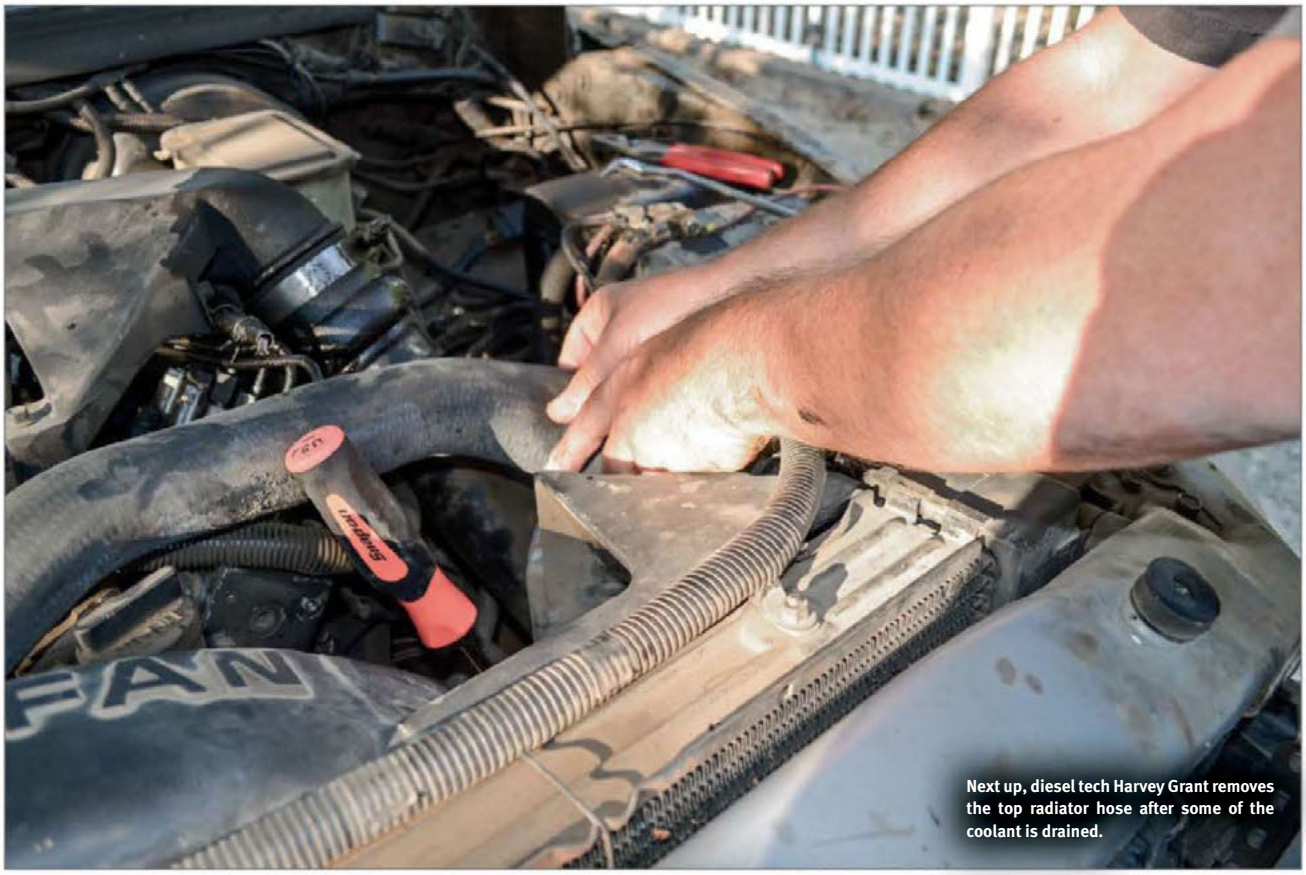

Next up, diesel tech Harvey Grant removes the top radiator hose after some of the coolant is drained.

Both the coolant overflow tank and the wiper fluid reservoir are removed from the factory fan shroud by prying them loose from their mounts and pulling upward. Make sure to unhook the factory low-washer-fluid sensor when performing this task.

Doing stuff like this gets old quick. And since we aren't even sure putting a new, stock radiator in will solve our cooling problems, we've decided to look at other options that would actually increase our cooling performance.

Fortunately for us, Mishimoto makes a direct-fit, high-performance radiator for most diesel applications, including our '95 Dodge. The radiator is made out of aluminum, which dissipates heat much better than the factory unit. It's lighter and also features TIG-welded aluminum end tanks instead of plastic. The complete radiator system includes a set of extremely durable silicone hoses (we were on our third top hose before the install), and a magnetic drain plug to catch any metallic debris. Finally, Mishimoto offers a lifetime warranty on its products, which made us feel confident that our cooling needs would be met for quite some time.

Another perk of installing this radiator in our Dodge is that it really is direct fit, meaning there's no cutting, welding, or drilling, and all the mounting brackets for the fan shroud and radiator itself are already in perfect position, which translates to an install virtually anyone can perform in their driveway. To illustrate that point, that's exactly what we did with the help of our diesel buddy, Harvey Grant. Follow along and see just how easy it was.

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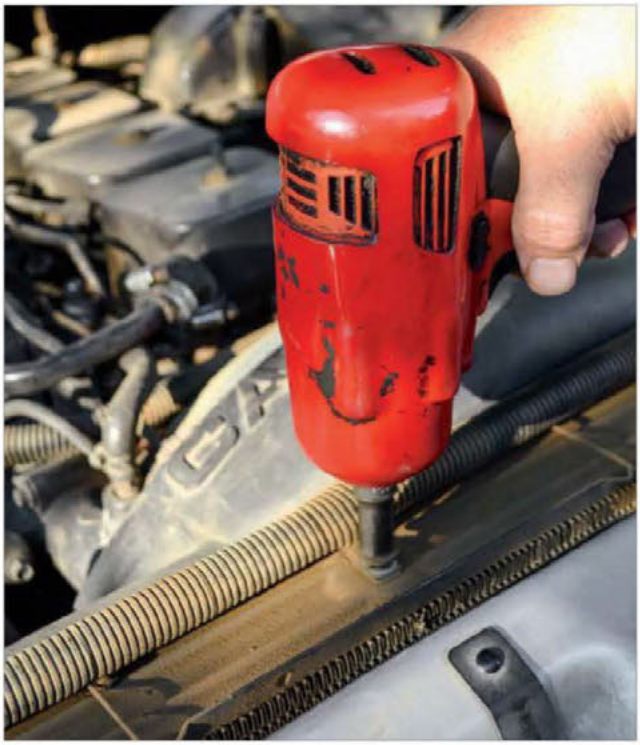
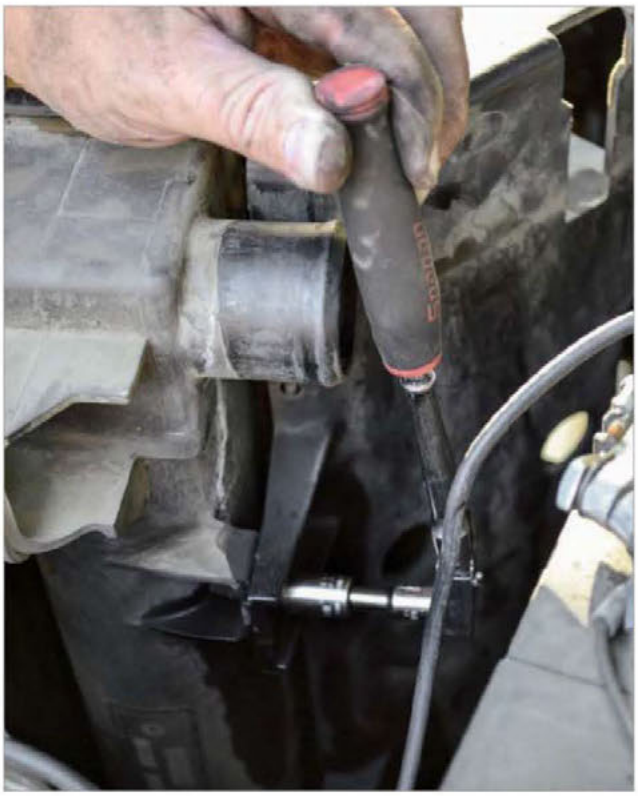


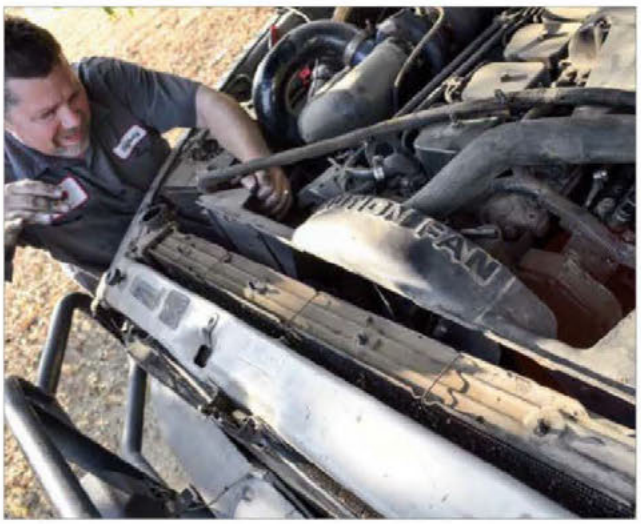
On the Dodge, the stock wiring loom runs across the top of the radiator. It needs to be removed before taking the radiator out.



The fan shroud must be pushed back toward the engine (but not removed from the engine bay). This is accomplished by removing the four bolts that hold it to the radiator.

Once the bolts are removed, there are still clips on the top that need to be taken out before the shroud can be detached from the radiator.

"With compound turbochargers, we could tow a trailer at nearly 400 hp—a power level that severely overtaxed the factory cooling system, which was only rated to support 160 hp."



The fan shroud doesn't need to be removed, just pushed back over the fan as shown in this photo.

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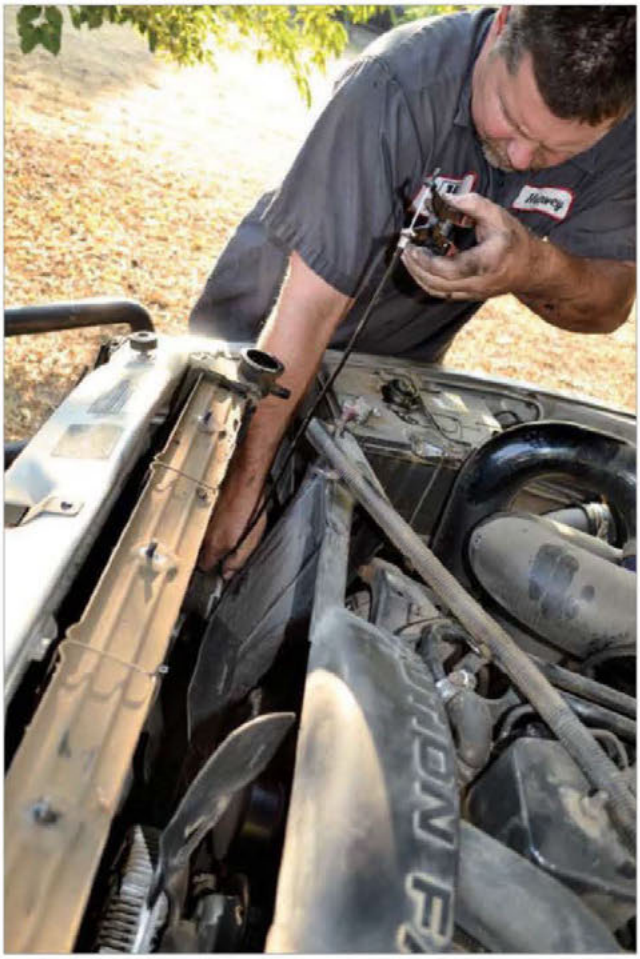
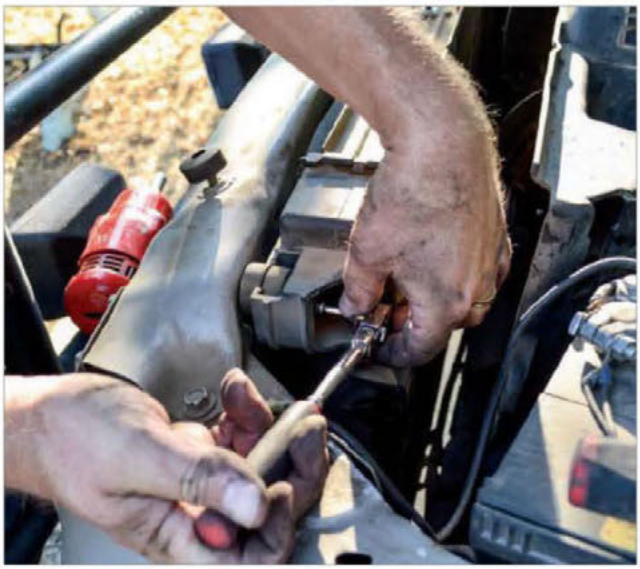
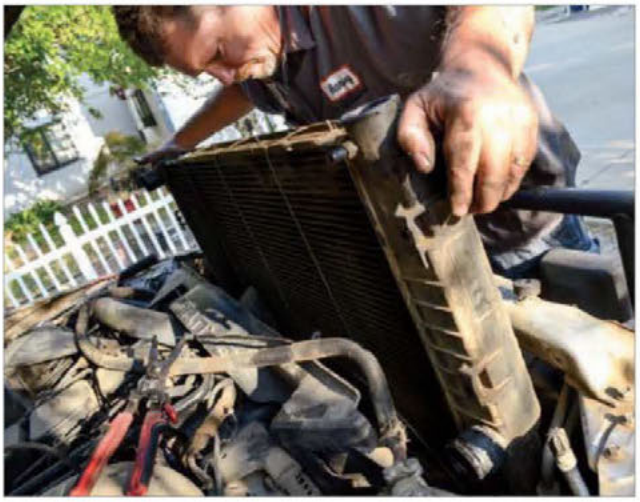


The last step before we got to the radiator itself was to remove the lower hose, which was accomplished with a pick and cable-operated hose clamp pliers.



The radiator is mounted with rubber grommets that attach on its bottom, and bolts on top. The two top bolts are fully removed; the bottom rubber grommets are press-fit and will allow the radiator to be removed just by pulling up.



Since the factory radiator only weighs about 30 pounds, it can be removed by one person.

When comparing the stock radiator to the Mishimoto unit (above), it was clear the replacement was modeled after the factory part and fits directly in its place. One difference in the Mishimoto version is that it has durable, TIG-welded aluminum end tanks (left) instead of plastic and has more cooling tubes than the factory radiator.

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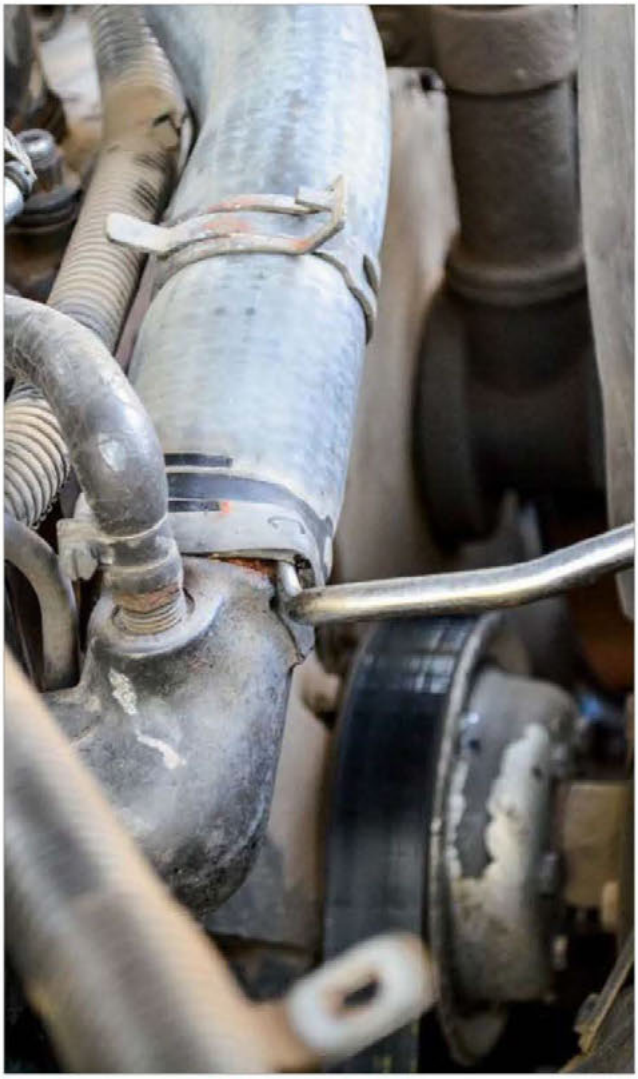
Before we put the new radiator in, we first removed the old radiator hoses, again with the help of hose-clamp pliers.



The old top hose was next, and it was stuck on pretty good. We used a pick to loosen it up, but a screwdriver will also work if yours is stuck.

A set of cool, dual-layer, silicone hoses was supplied with the radiator. The tubes are designed to handle extreme heat and pressure, and they look a lot better than our old parts store hoses.

Since everything was already out of the way, we installed our new lower hose first, before the radiator. After these photos were taken, we also stepped up to worm-gear clamps for securing the hoses.

Now we were cookin'. It was time to install the new aluminum radiator, which was lowered into place using the original rubber mounts (arrow).

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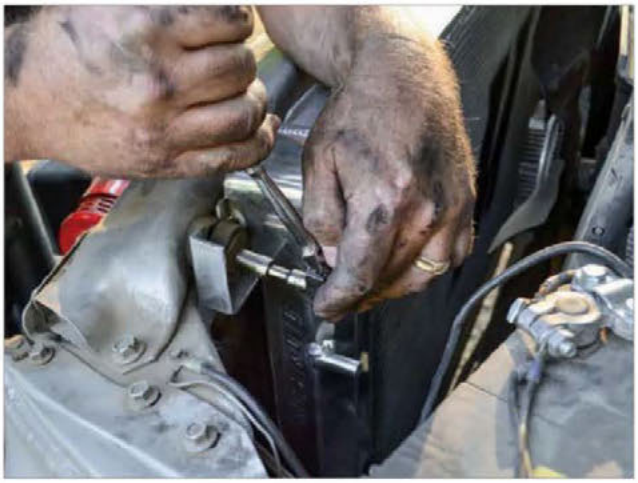
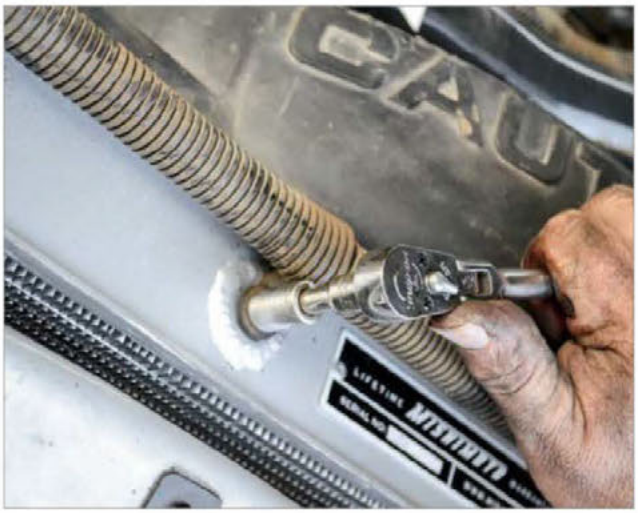
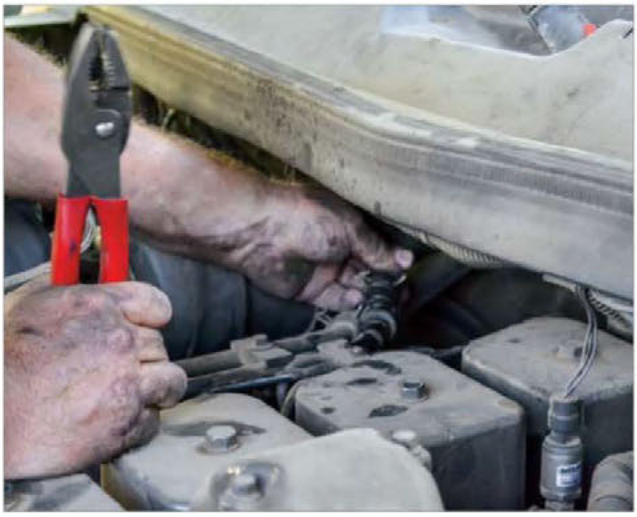


With the radiator in place, we tightened down the two top mounting bolts. The easiest way to do this is to go from one side to another before snugging the bolts up completely.

Next, the two-layer, upper hose was installed, bringing some much-welcomed shine to the engine bay.



Our final step of the installation involved re-securing the stock wiring harness to the top of the radiator. For this step, it's important to torque the nuts down just barely past the finger-tight mark, as over-tightening them will break the aluminum studs.



To purge air out of the system , a rear heater hose is disconnected and the engine is run until coolant flows out of the hose.

After reconnecting the heater hose, the engine is run for a few more minutes to release any air bubbles in the cooling system. Then the radiator is topped off with coolant and Mishimoto's high-pressure 19-psi cap is tightened down.

With the installation complete, we now had a lighter, better cooling, better looking radiator that even has a lifetime warranty. We already verified the truck no longer overheats in 100-degree weather with the A/C on, so it's clear the radiator is doing a superb job at cooling—just as it's designed to do.

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Stock P7100-remanufactured
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Dragon Flow-13mm plungers, 800cc
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5.9L & 6.7L Injection Pumps
Stock-2003-2011 Dodge Cummins
Dragon Flow-33% more fuel than stock
Dragon Fire-85% more fuel than stock
Double Dragon-120% more fuel than stock
Dragon Fire 200-200% more fuel than stock
DUAL CP3 PUMPS 2003-
5.9L & 6.7L Dual CP3's
New CP3-Additional towing powe
Modified CP3-Street/Race applicati
Dueling Dragons-Two 85% pumps
Dueling Double Dragons-Two 120%
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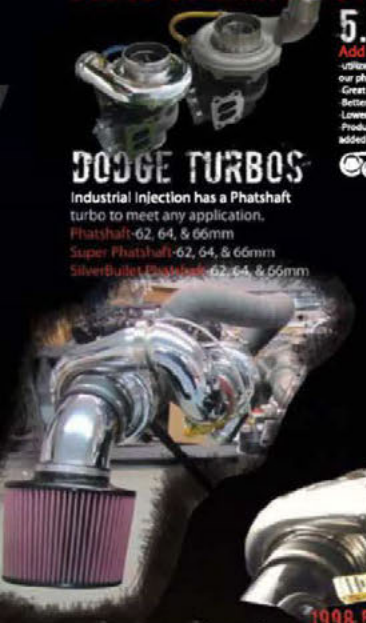
DODGE CUMMINS 1989-2011



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5.9L/6.7L COMPOUNDS

Add a turbo kit
-utilizes the sock turbocharger or our phatshaft 62/70
-Great for over 600hp
-Better fue: economy
-Lower exhaust gas temperatures
-Produces more boost for your added fueling upgrades.

6.7L WASTEGATES

The new external wastegate setup will be a great addition to the 6.7L twin kit. It is designed to reduce engine damaging drive pressure. The exhaust gas is vented to the hot pipe of the larger turbo, which allows more efficient boost.

1998.5-02

2ND GEN COMPOUNDS

Add a turbo to your phatshaft turbocharger. We offer this kit for the 1994-02 Dodge Cummins. It is great fot the weekend warrior in need of more towing power. With this compound kit you will experience quick spool up and very low exhaust gas temperatures. We also offer this kit with an S480 for higher horsepower applications.

COMPOUNDS FOR: LB7, LLY, LBZ, LMM & LML

DURAMAX COMPOUNDS 2001-2012

This kit for the duramax motor utilizes the stock turbo for quick spool up and lower EGT's. With added fuel to you Dmax you will need to boost turbo pressure to match. The kit is complete and is capable of over 600hp. We offer kits for the LB7, LLY, LBZ, & LMM.

2004.5-2010

DMAX TURBOS

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Stage one-capable of 500hp
Stage two-capable of 575hp

6.0L FORD TURBOS

Stock-remanufactured for stock applications.
Hybrid-remanufactured with a larger compressor wheel. Up to an additional 175hp over stock.
Powermax-Brand new from Garrett. Supports up to an additional 175hp over stock

7.3L FORD TURBOS

Stock-remanufactured for stock applications.
Hybrid GTP38-It is built with a quicker spool up exhaust housing and the non-surging compressor wheel.
GTP38R-88mm GT compressor wheel provides 33% more flow than the stock wheel. 1.00 A/R turbine housing, ported shroud housing.

6.4L FORD TURBOS

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6.0L COMPOUNDS

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Twin Turbo Kit-Uses our Silverbullet 66/80 with a Borgwarner S480 turbo. Comes as a complete kit to install on your 6.0L Powerstroke truck. Great for extreme drag racing and competition sled pulling.

INJECTORS

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DODGE CUMMINS 1989-2011

CR NOZZLES 2003-2011

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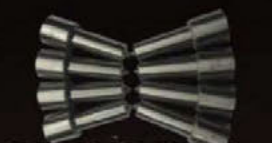
CHEVY DURAMAX 2001-2011



DMAX NOZZLES 2001-2009

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FORD 7.3L INJECTORS 1999-2003

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Stage two-80hp over stock (160cc)
Stage three-Capable of 500 rwhp (230cc)
Stage four-Capable of 600 rwhp (285cc)
Stage five-600+ rwhp (400cc)

FORD 6.0L INJECTORS

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Stage two-80hp over stock (190cc)
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Stage four-capable of 600+ rwhp (285cc)

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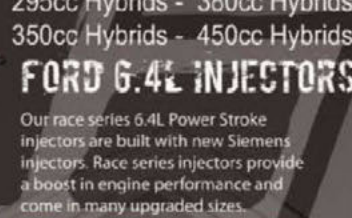

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2015 DIESEL TRUCK

It's hard to go wrong buying a diesel truck or van in 2015, given the massive factory power levels, fuel efficiency, and upscale interiors that are available. Whether you need a diesel for work or play, there are more options than ever for you. For 2015, engineers at Ram and Cummins have calibrated the 6.7L engine to put out an amazing 865 lb-ft of torque.

BUYER'S GUIDE

NEW FULLSIZE PICKUPS AND VANS COMING TO DEALER LOTS NEAR YOU

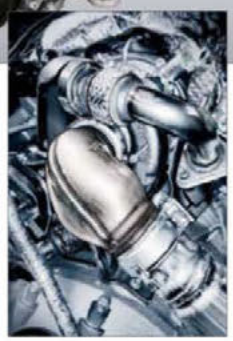
The year 2015 is going to be a great time to buy a fullsize diesel. Sure, we could've probably said that every year during the decade *Diesel Power* has been in publication, but it's still just as true. In fact, this year you can even buy a diesel truck from Ram with an amazing 865 lb-ft of torque straight from the dealership—and that's no typo. For some new rigs, factory torque ratings are nearing four digits, and the horsepower ratings are just as impressive, with Ford reaching modern muscle car levels with 440 hp. In addition to the ¾- and 1-ton trucks continuing to dominate the roads, there's a ½-ton diesel from Ram, and diesel vans are back in full-force with models available from all of the Big Three manufacturers, as well as Mercedes-Benz/Freightliner. So, if you have a big job to do, you have lots of options. Here's what you can find on dealer lots to meet your diesel needs.

FORD

THE SECOND generation of 6.7L Power Stroke engines debuts in the '15 Ford Super Duty with 440 hp and 860 lb-ft of torque. That's a notable improvement of 40 hp and 60 lb-ft over the previous generation thanks to a larger turbocharger, a new downpipe design, and higher-flowing injector tips. The new turbo also provides better exhaust braking, which can now be turned on and off with a push of a button on the instrument panel. Improvements to the F-350 chassis include new front springs along with a wide track axle when the high-capacity towing package is ordered, increasing the maximum gross combined weight rating (GCWR) from 31,900 pounds to 35,000 pounds. The F-450 gets a number of improvements that include new rear leaf springs; upgraded U-joints and rear suspension components; commercial-grade, 19.5-inch wheels and tires; stronger gears and linkages in the steering system; and larger brakes, like those used on chassis cab models. Along with those upgrades, the F-450 has a new fifth-wheel/gooseneck hitch that's designed to allow it to handle 6,500 pounds more than '14 F-450s, for a maximum tow rating of 31,200 pounds and a maximum GCWR of 40,000 pounds, which is 7,000 pounds more than the previous year.

The King Ranch edition of the Ford Super Duty shown here is a '15 F-250 FX4 model. The King Ranch edition has received a number of upgrades, including a body color grille surround, darker paint on the bumpers and lower body, and a new interior design (right) with the "Running W" logo from the actual King Ranch in Texas.

Under the hood of every new Super Duty diesel is a second-generation 6.7L Power Stroke engine that makes 440 hp at 2,800 rpm and 860 lb-ft of torque at 1,600 rpm. That's 40 hp and 60 lb-ft of torque more than the '14 model, and 5 hp more than the preliminary numbers for the '15 Ford Mustang V-8.



The new, second-generation 6.7L Power Stroke engine has a larger turbocharger, higher-flowing injector tips, and a "cobra head" downpipe that's designed to minimize restrictions in the exhaust flowing out of the turbo.

The all-new '15 Ford Transit is a fullsize, rear-wheel-drive unibody van that replaces the iconic body-on-frame Ford E-Series. The Transit has an available inline five-cylinder 3.2L Power Stroke diesel engine that makes 185 hp and 350 lb-ft of torque and is hooked to a six-speed shiftable automatic transmission. The van is available in two wheelbases, three roof heights, three lengths, and four body styles. The high-roof Transit model has 81.5 inches of interior cargo height (enough headroom for a 6-foot, 4-inch person to stand upright) and provides up to 487.3 cubic feet of cargo capacity, which is 80 percent more than the largest E-Series held. The Transit has a maximum GVWR of up to 10,360 pounds, a maximum payload of up to 4,280 pounds, and a maximum tow rating of up to 7,500 pounds, depending on the configuration ordered.

FORD (CONTINUED)

The '15 Ford Transit is a new, fullsize unibody van with rear-wheel drive that replaces the Ford E-Series. It can be ordered with an inline five-cylinder 3.2L Power Stroke diesel that's rated to make 185 hp at 3,000 rpm and 350 lb-ft of torque at 1,500 to 2,750 rpm.

GENERAL MOTORS

THE MOST NOTICEABLE change for the Chevrolet Silverado and GMC Sierra 2500HD/3500HD trucks is the addition of the double cab models, with front-hinged doors, that replace the extended cabs. Along with the new cab design, the trucks have new interiors, standard StabiliTrak with Trailer Sway Control, and a new airflow design for better underhood cooling. Other features include all-new, stronger 6-foot 6-inch and 8-foot cargo beds with CornerStep bumpers and EZ Lift-and-Lower tailgates. The '15 Silverado and Sierra are powered by the 6.6L Duramax LML V-8 engine that's good for 397 hp and 765 lb-ft of torque

Notice something different? There's no longer an extended cab body style for the Chevrolet/GMC Silverado/Sierra 2500HD/3500HD. Those models have been replaced by the double cab, which has front-hinged "normal" style doors, like those found on Ram trucks.

The GM trucks have new interiors for 2015 that are designed to be more spacious and have more storage areas. Controls have been redesigned to be easier to reach, and more plug-ins for electronic devices have been added.

New for 2015 is the GMC Sierra All Terrain HD package, which includes the Z71 Off Road option, along with special exterior and interior features. On the outside are new LED headlamps, a chrome grille surround, body color or full-chrome bumpers, 18-inch six-spoke chrome wheels, and chrome-capped towing mirrors. Inside is a new carbon-fiber theme, special badges, a 4G LTE WiFi hotspot, and a standard rearview camera.

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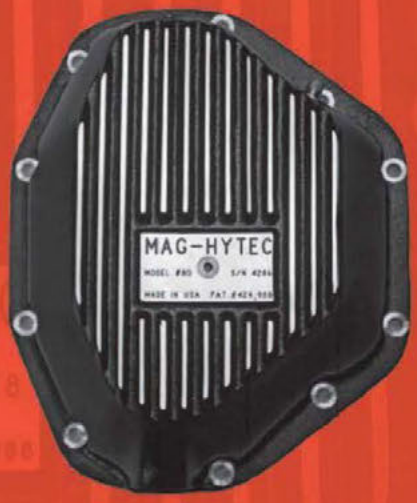

Just Released GM T-400

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GENERAL MOTORS
(CONTINUED)

and is connected to a six-speed Allison 1000 transmission. The maximum available payload is 5,817 pounds, the maximum fifth-wheel/gooseneck tow rating is now 23,200 pounds (formerly 22,500 pounds), and the conventional tow rating has increased from 18,000 pounds to 19,600 pounds. The front suspension for both two- and four-wheel-drive models continues to be a torsion bar independent front setup (unlike Ford and Ram), with a leaf-sprung solid axle in the rear on all models. GM is offering two new up-level models for '15 to hold buyers over until the new generation of ¾- and 1-ton trucks arrive for 2016. The Chevy Silverado High Country HD and the GMC Sierra All Terrain HD both come with special interior and exterior features and include unique wheels and all-new, chrome-capped, heated trailering mirrors with built-in backup lamps and turn signals.

The exterior of the '15 Chevy/GMC 2500HD/3500HD trucks has been redesigned for better cooling airflow into the engine compartment. Both two- and four-wheel drive models utilize an independent front suspension with torsion bars, unlike the Ford and Ram trucks.

The '15 Chevy Silverado High Country HD is a new upscale package similar to the GMC All Terrain HD. It includes a unique chrome grille, body color bumpers with rear CornerSteps, side steps, and High Country badging. Interior features include an exclusive Saddle Brown upholstery and heated and cooled perforated leather bucket seats.

The '15 Chevy Express and GMC Savana are the only fullsize vans with an available diesel V-8 engine and are by far the most powerful in their segment when equipped with the LGH version of the 6.6L Duramax (260 hp at 2,800 rpm and 525 lb-ft of torque at 1,600 rpm).

The body-on-frame Chevy Express and GMC Savana 2500/3500 fullsize rear-wheel-drive vans continue to be offered with the LGH version of the Duramax 6.6L V-8 diesel engine with ratings of 260 hp and 525 lb-ft of torque—the most available in any van. They use the Hydra-Matic 6L90 six-speed automatic transmission, and the 3500 models have a maximum GVWR of 9,600 pounds, a maximum payload of 4,145 pounds, and maximum trailer tow ratings of 10,000 pounds. Changes for the '15 model year include the addition of a standard 110-volt power outlet, three banks of LED interior lights, new radios with audio inputs, standard side-cut keys, and new exterior colors (Red Hot and Rainforest Green Metallic for Chevrolet and Emerald Green for GMC).

The GM diesels are powered by the LML version of the 6.6L Duramax V-8 engine that's rated to make 397 hp at 3,000 rpm and 765 lb-ft of torque at 1,600 rpm. The engine is backed by a six-speed Allison 1000 automatic transmission.

COMING SOON:

It's been announced that the all-new '15 Nissan Titan will have an optional Cummins 5.0L V-8 diesel engine that makes "more than 300 hp" and will have a torque rating "in the mid-500s (lb-ft)." The engine is called the ISV5.0 and features a compacted graphite iron block, aluminum heads, and a variable-geometry turbocharger. We had a first look at this engine (and a V-6 version) in the December 2006 issue of *Diesel Power* ("Sneak Peak— New Cummins V-6 and V-8 Diesel Engines") while it was still being developed by Cummins along with the Department of Energy.

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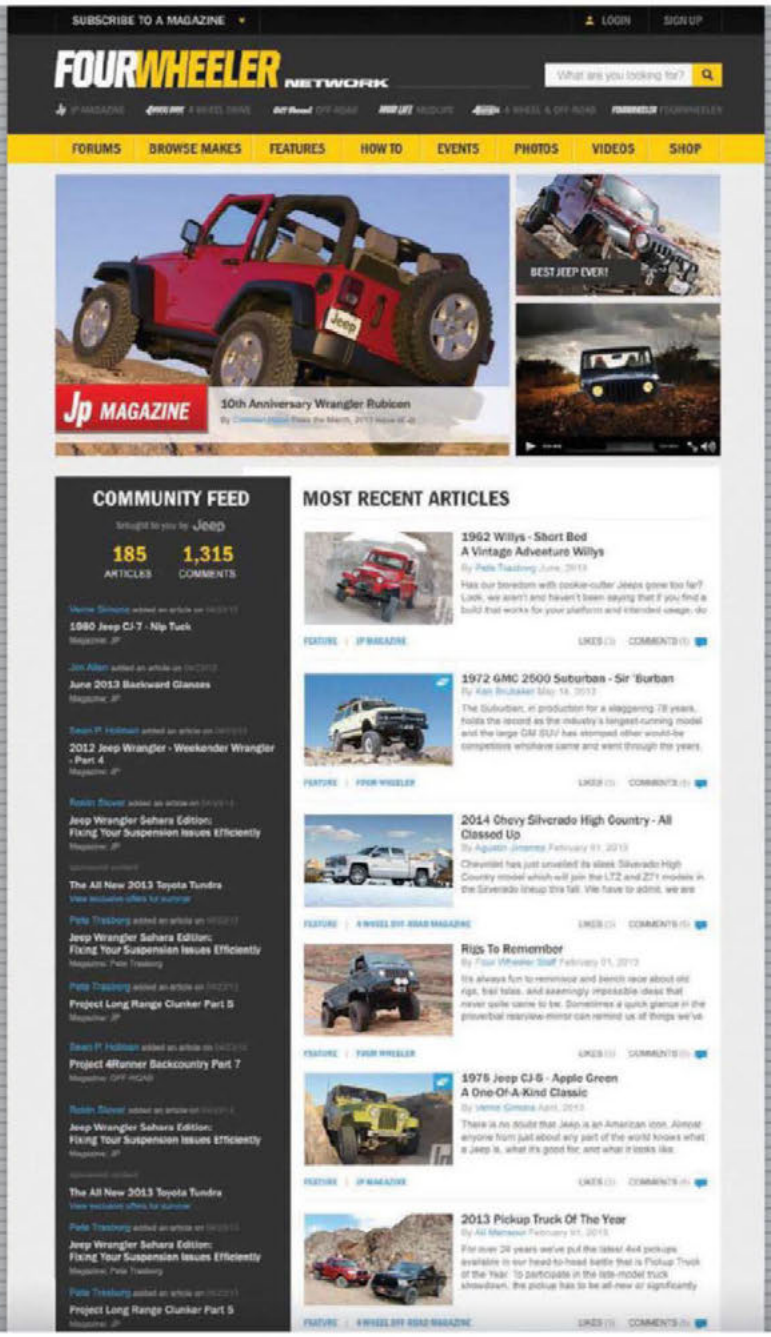

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RAM

EVER SINCE THE Ram 1500 EcoDiesel debuted for the 2014 model year, it's been flying off dealer lots—up to six times as fast as the gas models—according to Chrysler Group executives. In fact, the initial 8,000 trucks fitted with the diesel powertrain were spoken for just three days after the order banks opened. America had been without a ½-ton diesel for 15 years, and a pickup with 420 lb-ft of torque that can tow up to 9,200 pounds and gets up to 28 mpg highway is apparently just what the people wanted. The Ram 1500 EcoDiesel is equipped with the VM Motori 3.0L V-6 diesel that's rated at 240 hp and adds $2,850 to a similarly equipped Ram with a 5.7L Hemi gas engine and the Torqueflite 8HP70 eight-speed automatic by ZF (the only transmission you can get with the diesel). All Ram 1500 pickups have an independent front suspension and smooth-riding five-link rear suspension, and some models can be ordered from the factory with an active airbag suspension system with adjustable ride height. The Ram 1500 EcoDiesel has a maximum payload of 1,610 pounds and a maximum GCWR of 14,750 pounds. For 2015, the Ram 1500 can be ordered with Black Forest Green paint, and SLT trims with the Luxury Group and Laramie models get a new instrument panel welcome screen.

The Ram 1500 EcoDiesel was the first ½-ton clean diesel to go on sale and has been a huge success, leading Ram to announce in September that it will double production. It features a 3.0L V-6 diesel engine and an eight-speed 8HP70 transmission combination that's rated at 20 mpg in the city and 28 mpg on the highway.

The EcoDiesel engine used in the Ram 1500 is based on the VM Motori A 630 that's founded on a compacted graphite iron block, aluminum heads, and a variable-geometry turbo. In the Ram pickup, the engine makes 240 hp at 3,600 rpm and 420 lb-ft of torque at 2,000 rpm.

The engineers at Ram decided to turn up the torque for 2015 and achieved the highest rating for any 1-ton truck ever sold in the U.S., with 865 lb-ft at 1,700 rpm. The 15 lb-ft of additional torque comes with a 385hp rating, with both figures attributed to aggressive fuel delivery and turbo boost calibrations for the Cummins 6.7L engine. These output ratings are reserved for the 3500 with the Aisin AS69RC six-speed automatic transmission, which has a maximum payload of 6,720 pounds, a GCWR of up to 37,900 pounds, and a maximum towing capacity of up to 30,000 pounds. When the 6.7L is ordered with the 68RFE transmission, it's rated at 370 hp and 800 lb-ft of torque, and the trucks with the G56 six-speed manual transmission (the only manual available in a ¾- or 1-ton truck) are calibrated for 350 hp and 660 lb-ft of torque. The Ram 2500 continues to be the only ¾-ton truck with a five-link rear suspension setup with coil springs (or optional airbags). The 1-ton 3500 models use leaf springs over the solid rear axle and have optional supplemental airbags available from the factory. A new feature for 2015 is optional "Ram Work Grade" vinyl seats designed for extreme durability, especially on the sides of the seats, where excessive wear often occurs. Other new features include power-folding 7x11-inch tow mirrors, a flat-load floor option that's now available on crew cab models, a new instrument panel welcome screen for higher-level

The Ram 2500 is the only ¾-ton truck that doesn't rely on a leaf spring rear suspension. Instead, it uses a five-link suspension setup with coil springs or optional load-leveling airbag springs.

The '15 Ram 3500 can be ordered with a high-output Cummins engine rated at 385 hp at 2,800 rpm and 865 lb-ft of torque at 1,700 rpm. The 1-ton Ram has a leaf-sprung solid axle rear suspension that can be ordered with supplemental airbag helper springs on both single- and dual-rear-wheel models.

The 6.7L Cummins engine is the only diesel still available for ¾- and 1-ton trucks with a manual transmission. When equipped with the G56 six-speed manual, the engine is rated to make 350 hp at 2,800 rpm and 660 lb-ft of torque at 1,500 rpm. When the 6.7L is mated to the 68RFE automatic, the ratings are 370 hp at 2,800 rpm and 800 lb-ft of torque at 1,600 rpm. The highest power ratings are reserved for 3500 models with the Aisin AS69RC transmission and clock in at 385 hp and 865 lb-ft of torque.

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#ISK814
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Powerstroke 6.0L
Fuel Pressure Update, Blue Spring

#ISK612
3C3Z-9T517AG

HCFM Drain Plug

#ISK615

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RAM *(CONTINUED)*

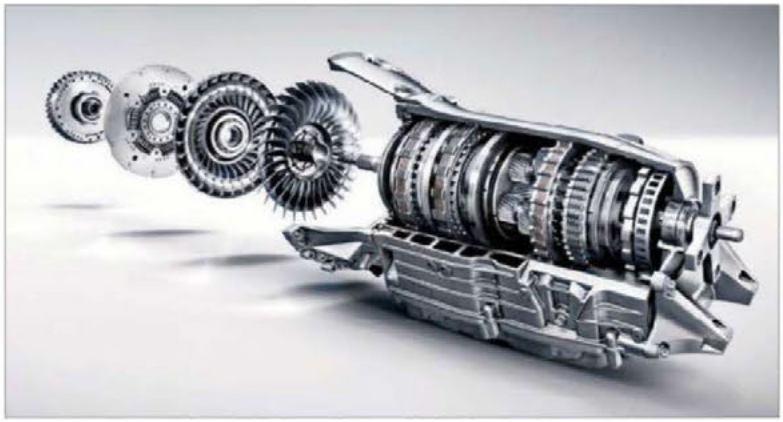
trims, and Black Forest Green Pearl paint.

The '15 Ram ProMaster is a fullsize front-wheel-drive van with a combination unibody and ladder frame design that's based on the Fiat Ducato sold in Europe. It's powered by a large displacement 3.0L inline four-cylinder engine that makes 174 hp and 295 lb-ft of torque and is based on the Fiat Multijet 180 engine. It provides payload capacity of up to 4,160 pounds, a maximum towing capacity of up to 5,100 pounds, a maximum GVWR of 9,350 pounds, and a maximum GCWR of 12,500 pounds. The engine is backed by the unconventional M40 gearbox that has the efficiency of a manual but with automatic gearshifts and clutch functions accomplished by an electro-hydraulic actuation system. The ProMaster is available in 14 different configurations thanks to the availability of two roof heights, three wheelbases, and four body lengths.

The chassis of the '15 Ram ProMaster uses a combination of a unibody and a ladder frame. The front-wheel-drive van is based on the Fiat Ducato that's been around for 30 years overseas. It's powered by a large-displacement 3.0L inline four-cylinder engine that makes 174 hp at 3,600 rpm and 295 lb-ft of torque at 1,400 rpm, and it has a unique six-speed automated manual transmission.

MERCEDES-BENZ FREIGHTLINER SPRINTER

THE SPRINTER BY Mercedes-Benz and Freightliner was completely redesigned in 2014. Not much has changed for 2015, except for the addition of a lifted all-wheel-drive model. The '15 Sprinter 4x4 has an electrically activated all-wheel-drive system that splits torque 35:65 to the front and rear, and an optional low range that provides a gear reduction of 42 percent. The Sprinter 4x4 is only available with the 3.0L BlueTEC V-6 engine that makes 188 hp and 325 lb-ft of torque and a five-speed shiftable automatic transmission, but other models can be ordered with a 2.1L BlueTEC inline four-cylinder two-turbo engine that puts out 161 hp and 265 lb-ft of torque and is hooked to a seven-speed shiftable automatic transmission. The '15 Sprinter is available in two wheelbases, three body lengths, and two cargo area heights and has a maximum payload capacity of 5,508 pounds, a GVWR of up to 11,030 pounds, and a maximum towing capacity of 7,500 pounds.



The Sprinter 4x4 is all new for 2015 and features a 4-inch body lift and an all-wheel-drive system with an optional low range. While the Sprinter 4x4 will only be available with the 3.0L V-6 engine that makes 188 hp and 325 lb-ft of torque and a five-speed automatic, other models can be ordered with a two-turbo 2.1L four-cylinder engine that makes 161 hp at 3,800 rpm and 265 lb-ft at 1,400 to 2,400 rpm and a seven-speed automatic (shown).

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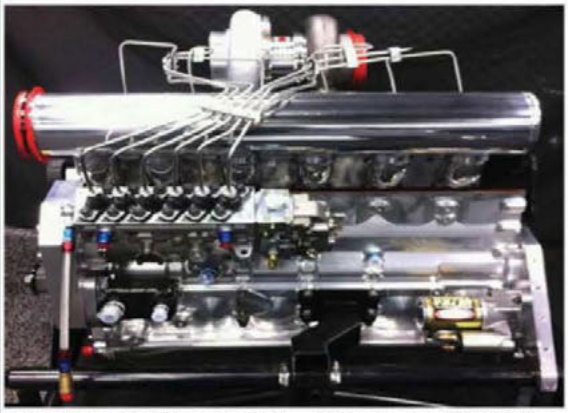

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ENGINE SPECIFICATIONS

CHEVROLET/GMC

- **ENGINE:** Chevrolet/GMC Duramax LML
- **DISPLACEMENT:** 6.6L (403 ci)
- **CONFIGURATION:** V-8
- **POWER:** 397 hp at 3,000 rpm (LML – pickups)
- **TORQUE:** 765 lb-ft at 1,600 rpm (LML – pickups)
- **POWER:** 260 hp at 2,800 rpm (LGH – vans)
- **TORQUE:** 525 lb-ft at 1,600 rpm (LGH – vans)
- **TURBOCHARGING:** Single, variable-geometry turbocharger
- **BORE X STROKE:** 4.05 x 3.89 inches
- **COMPRESSION RATIO:** 16.0:1
- **VALVETRAIN:** OHV 32 valves
- **HEAD MATERIAL:** Aluminum alloy
- **BLOCK MATERIAL:** Cast iron
- **TRANSMISSION:** Six-speed shiftable automatic

FORD

- **ENGINE:** Ford Power Stroke
- **DISPLACEMENT:** 6.7L (406 ci)
- **CONFIGURATION:** V-8
- **POWER:** 440 hp at 2,800 rpm
- **TORQUE:** 860 lb-ft at 1,600 rpm
- **TURBOCHARGING:** Single, variable-geometry turbo
- **BORE X STROKE:** 3.90 x 4.25 inches
- **COMPRESSION RATIO:** 16.2:1
- **VALVETRAIN:** OHV 32 valves
- **HEAD MATERIAL:** Aluminum alloy
- **BLOCK MATERIAL:** Compacted graphite iron
- **TRANSMISSION:** Six-speed shiftable automatic

- **ENGINE:** Ford Power Stroke (Duratorq)
- **DISPLACEMENT:** 3.2L (195 ci)
- **CONFIGURATION:** Inline five-cylinder
- **POWER:** 185 hp at 3,000 rpm
- **TORQUE:** 350 lb-ft at 1,500 to 2,750 rpm
- **TURBOCHARGING:** Single, variable-geometry turbocharger
- **BORE X STROKE:** 3.54 x 3.96 inches
- **COMPRESSION RATIO:** 15.7:1
- **VALVETRAIN:** DOHC 20 valves
- **HEAD MATERIAL:** Aluminum alloy
- **BLOCK MATERIAL:** Cast iron
- **TRANSMISSION:** Six-speed shiftable automatic

MERCEDES-BENZ

- **ENGINE:** Mercedes-Benz BlueTEC (OM642)
- **DISPLACEMENT:** 3.0L (182 ci)
- **CONFIGURATION:** V-6
- **POWER:** 188 hp at 3,800 rpm
- **TORQUE:** 325 lb-ft at 1,400 to 2,400 rpm
- **TURBOCHARGING:** Single, variable-geometry turbocharger
- **BORE X STROKE:** 3.27 x 3.62 inches
- **COMPRESSION RATIO:** 18.0:1
- **VALVETRAIN:** DOHC 24 valves
- **HEAD MATERIAL:** Aluminum alloy
- **BLOCK MATERIAL:** Aluminum alloy/compacted graphite iron sleeves
- **TRANSMISSION:** Five-speed shiftable automatic

- **ENGINE:** Mercedes-Benz BlueTEC (OM6510)
- **DISPLACEMENT:** 2.1L (131 ci)
- **CONFIGURATION:** Inline four-cylinder
- **POWER:** 161 hp at 3,800 rpm
- **TORQUE:** 265 lb-ft at 1,400 to 2,400 rpm
- **TURBOCHARGING:** Two sequential turbochargers
- **BORE X STROKE:** 3.27 x 3.90 inches
- **COMPRESSION RATIO:** 16.2:1
- **VALVETRAIN:** DOHC 16 valves
- **HEAD MATERIAL:** Aluminum alloy
- **BLOCK MATERIAL:** Cast iron
- **TRANSMISSION:** Seven-speed shiftable automatic

RAM

- **ENGINE:** Cummins B-Series
- **DISPLACEMENT:** 6.7L (408 ci)
- **CONFIGURATION:** Inline six-cylinder
- **POWER:** 385 hp at 2,800 rpm (AS69RC auto. transmission, 3500 only)
- **TORQUE:** 865 lb-ft at 1,700 rpm (AS69RC auto. transmission, 3500 only)
- **POWER:** 370 hp at 2,800 rpm (68RFE auto. transmission)
- **TORQUE:** 800 lb-ft at 1,600 rpm (68RFE auto. transmission)
- **POWER:** 350 hp at 2,800 rpm (G56 manual transmission)
- **TORQUE:** 660 lb-ft at 1,500 rpm (G56 manual transmission)
- **TURBOCHARGING:** Single, variable-geometry turbocharger
- **BORE X STROKE:** 4.21 x 4.88 inches
- **COMPRESSION RATIO:** 16.2:1
- **VALVETRAIN:** OHV 24 valves
- **HEAD MATERIAL:** Cast iron
- **BLOCK MATERIAL:** Cast iron
- **TRANSMISSION:** Six-speed manual or six-speed shiftable automatic

[Sources]

Chevrolet
www.chevrolet.com

Ford
www.ford.com

Freightliner Sprinter
www.freightlinersprinterusa.com

GMC
www.gmc.com

Mercedes-Benz Sprinter
www.mbsprinterusa.com

Ram
www.ramtrucks.com

RAM (CONTINUED)

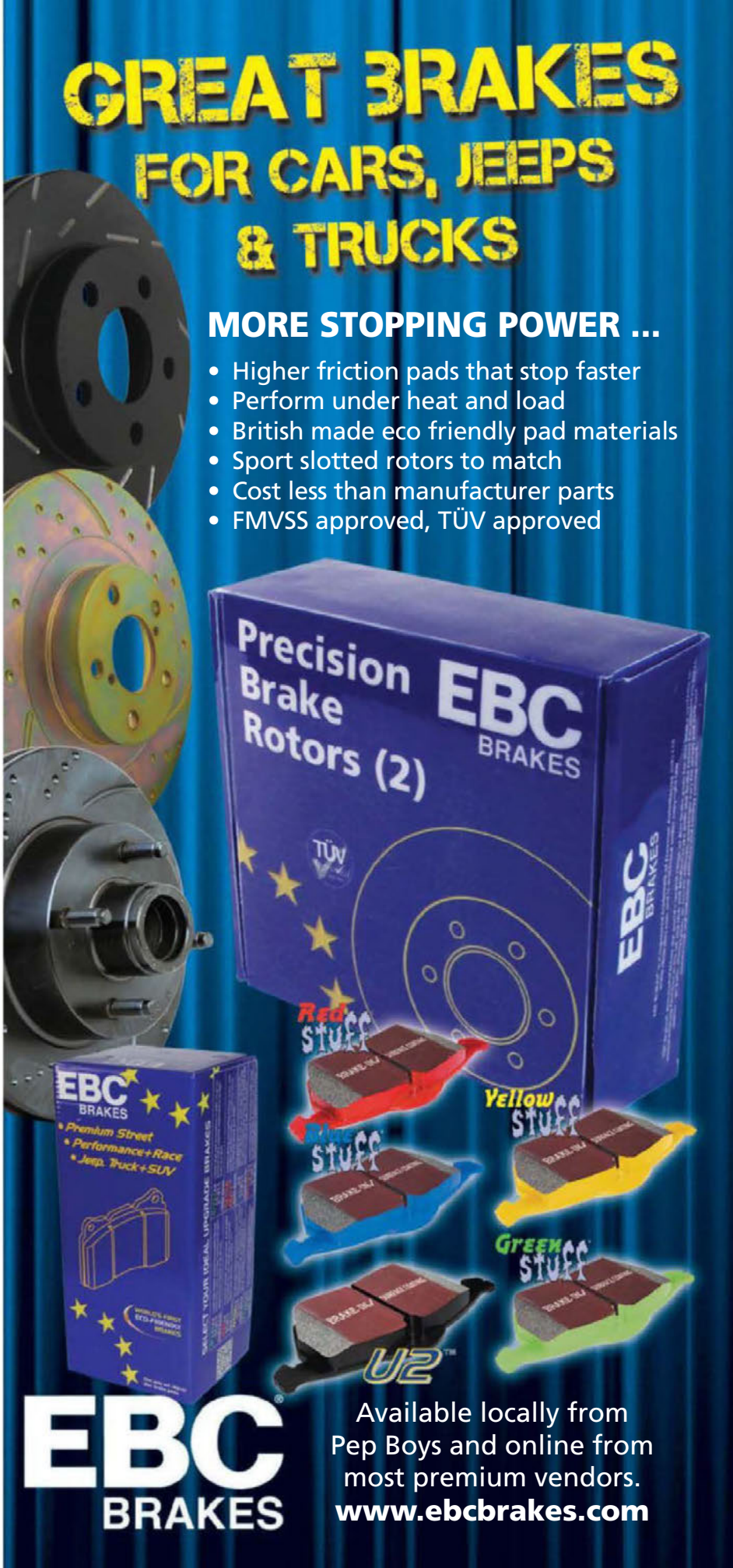
- **ENGINE:** Ram EcoDiesel (VM Motori A 630)
- **DISPLACEMENT:** 3.0L (182 ci)
- **CONFIGURATION:** V-6
- **POWER:** 240 hp at 3,600 rpm
- **TORQUE:** 420 lb-ft at 2,000 rpm
- **TURBOCHARGING:** Single, variable-geometry turbocharger
- **BORE X STROKE:** 3.27 x 3.60 inches
- **COMPRESSION RATIO:** 16.5:1
- **VALVETRAIN:** DOHC 24 valves
- **HEAD MATERIAL:** Aluminum alloy
- **BLOCK MATERIAL:** Compacted graphite iron
- **TRANSMISSION:** Eight-speed shiftable automatic

- **ENGINE:** Ram EcoDiesel (Fiat 180 MultiJet)
- **DISPLACEMENT:** 3.0L (183 ci)
- **CONFIGURATION:** Inline four-cylinder
- **POWER:** 174 hp at 3,600 rpm
- **TORQUE:** 295 lb-ft at 1,400 rpm
- **TURBOCHARGING:** Single, variable-geometry turbocharger
- **BORE X STROKE:** 3.78 x 4.09 inches
- **COMPRESSION RATIO:** 17.5:1
- **VALVETRAIN:** DOHC 16 valves
- **HEAD MATERIAL:** Aluminum alloy
- **BLOCK MATERIAL:** Cast Iron
- **TRANSMISSION:** Six-speed automated-manual

TOWING STANDARDS

Be sure to check out the February 2015 issue of *Diesel Power* for a full breakdown of the new SAE J2807 towing standards and how the testing affects the maximum trailer tow ratings of new ¾- and 1-ton diesel trucks. Throughout this buyer's guide, the maximum specifications listed are dependent on the vehicle configuration.

The maximum ratings shown are the highest for each category (payload, conventional towing, fifth-wheel/gooseneck towing, GCWR, and so on) based on the configuration that has the best setup for that measurement. For example, a regular cab two-wheel-drive pickup will have different ratings than a crew cab four-wheel-drive dualie with the same model name.



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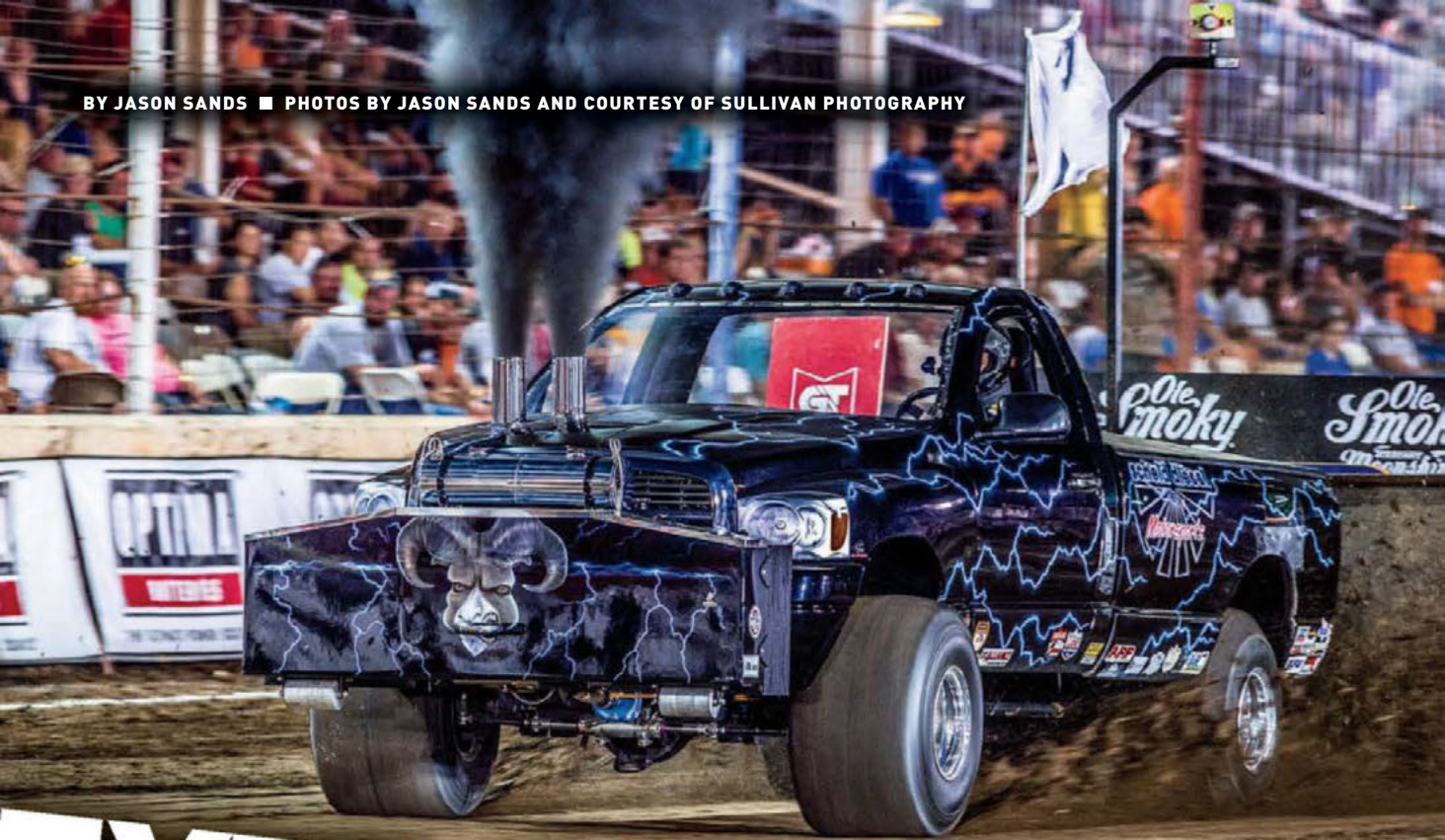


EXTRAVAGANZA!

SCHEID DIESEL'S ANNUAL BASH

If you're a fan of swaps, there are few trucks that are faster than Bean's Diesel Performance's common-rail, Cummins-powered Chevy C10. After a squirrelly wheels-up launch, the truck clicked off a 6.34 at 109.78 mph.

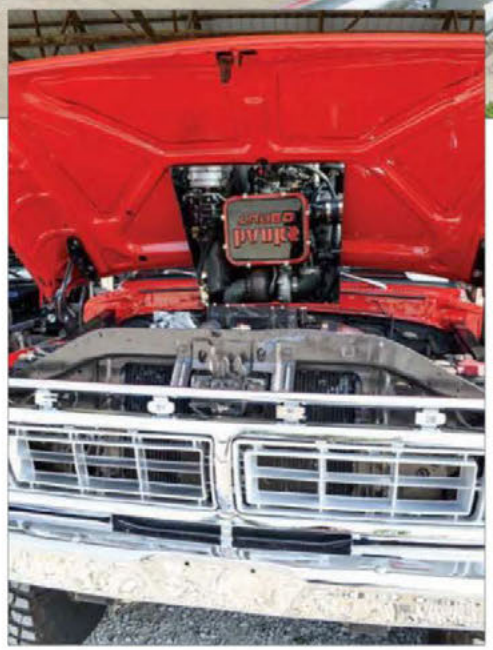
Drag racing is also a big part of SDX, and the Scheid Diesel dragster was far and away the fastest vehicle on the grounds, running 4.49 seconds at 167.91 mph in the eighth-mile. It's powered by an aluminum-block Cummins-based engine that puts out nearly 2,500 hp.

Yes, folks, it's that time again—time for our annual report in which we document what might be the biggest diesel event of the entire year: the Scheid Diesel Extravaganza. The 2014 event saw unprecedented rains and thunderstorms, but even with the sled pulls being cut short on Saturday night, nobody could argue that the three-day affair was a hell of a spectacle.

Located in Terre Haute, Indiana, SDX (as it's called for short) brought out some of the top sled pullers in the nation, with 35 trucks signing up for the ultra-competitive, 2.6-inch turbo Class, 39 rigs for 3.0, and a whopping 11 Super Stock Diesel trucks. We can't forget tractors, either, as there was also a multitude of those vehicles in attendance.

But SDX isn't only about pulling. A bustling manufacturers' midway was full of innovative products from a variety of companies, and the show 'n' shine area was full of chrome and polish on diesels of all makes and models. Crossroads Dragway also provided an outlet for those who liked to go fast, with plenty of eighth-mile drag racing action. There was a general bracket class, 6.60 and 7.70 index Classes, and heads-up Pro Street, Pro Stock, and Top Dragster Classes. If you were looking for drag racing, the dragstrip had it, with a number of participants breaking 120 mph in only 660 feet of space.

After the smoke settled, those who were there for the weekend enjoyed an event that will be hard to match. We feel it's the awesome competitors and vendors, and show, pull, and drag vehicles that make this event what it is. With that in mind, enjoy the next few pages to see the very best the 2014 Scheid Diesel Extravaganza had to offer.

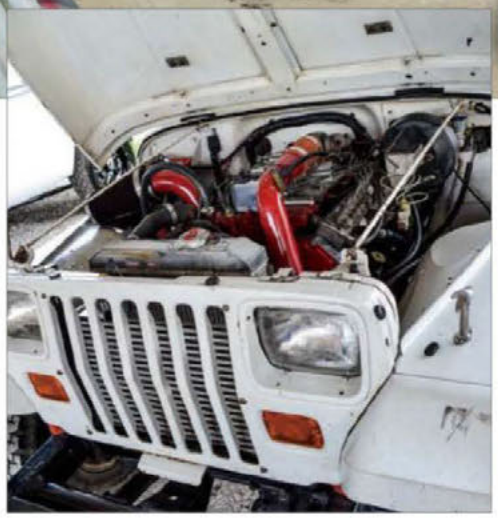


One of the cleanest rides in the show was this IDI Ford, which had a mirror on the underside of the hood to show off its Banks turbocharger setup.

A growing part of the Scheid Diesel Extravaganza is the show 'n' shine competition, which features trucks of all makes and models, including swaps. Older trucks made their resurgence at the 2014 event—especially first-generation Dodges and old-body-style (OBS) Fords.

EXTRAVAGANZA!

John Robinson put on quite a show with his Cummins-powered Altered, running 4.80s in the eighth-mile and wowing the fans with half-track burnouts and sideways passes that ended with the deployment of twin parachutes.



A diesel Jeep is on many people's "want" list, and this Cummins 4BT-powered model was very well done. The owner also mentioned that with a curb weight of less than 4,000 pounds, it was "pretty darn fast."

We snapped a photo of Nate Primm's Ford 6.4L as we were walking up to the second dyno on location then did a double take at the dyno graph, after the stock-appearing Ford laid down 710 hp!

Scheid Diesel had two chassis dynos running at the event. Video cameras trained on one of them (the company's Mustang chassis dyno) allowed fans to watch the power fest on an indoor screen.

To get out of the heat, we ducked into the manufacturers' midway located inside a pavilion at the fairgrounds, where performance parts from such companies as ATS, Haisley Machine, ARP, Precision Turbo and, of course, Scheid Diesel were on display.

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EXTRAVAGANZA!

Over in the sled pulling pits were trucks from all areas of the country (and some even from Canada). We spotted California puller Josh Lacey's Chain Smoker Dodge, which had made the haul cross-country to compete in the 2.6 Class.

Back outside, we noticed this ultra-clean Power Stroke. Despite the popularity of the 6.4L Ford, 7.3Ls and 6.0Ls are still great trucks for modifying.

Tractors were also at Scheid in force. With turbos in the 5-plus-inch range, forcing 100 psi of boost into 500-plus cubic inches, the 3,000hp engines that power these pullers truly are sights to behold.

Although the popular 3.0 Class Cummins Killer Duramax puller had mechanical issues during the event, its half-flip body drew a ton of attention in the pits.

Major horsepower was also on display in the show area. We heard rumblings about 1,200 to 1,300 hp for this triple-turbo Duramax.

One of the best stories of the event revolved around the Wild Diesel truck that had been purchased from Ken Jones just a few days before the event. Since it arrived at Scheid just hours before the grounds opened, the scramble was on to get the truck ready for the pulls.

"But SDX isn't only about pulling. A bustling manufacturers' midway was full of innovative products from a variety of companies, and the show 'n' shine area was full of chrome and polish on diesels of all makes and models."

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EXTRAVAGANZA!

The 6.60 Class saw a very fast field, with many competitors running very close to that magic number. In the finals, Derek Rose (far lane) outran Bruce Block's sideways-launching common-rail Ram.

In the 2.6 Class, the All Attitude Dodge managed to hold off the rest of the field with an impressive 324.61-foot effort.

Returning to the Pro Street Class, the fastest pass of qualifying came from Seth Sullivan's Dodge, which clicked off a 5.93 at an insane 131 mph, before losing control and going into the grass at the top end of the track. Luckily, a broken brake caliper and some broken welds on the bed were the only things that were damaged.

Eagle-eyed readers will notice the "Manual Mafia" sticker on this Cummins-powered Dodge. Aside from a couple of Duramax-powered GM trucks that are still holding on to the Allison automatic transmission, virtually every competitive 2.6 Class and 3.0 Class puller runs a manual transmission.

BorgWarner brought a whole line of turbochargers to display. Here, a small S300 frame turbo is getting eaten by BorgWarner's enormous tractor-pulling option.

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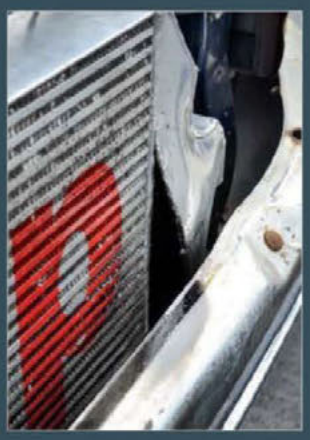
EXTRAVAGANZA!

Despite the 4x4 Dodge's early lead, Jim Layden took the 7.70 Class win against perennial tough competitor Johnny Gilbert in his VP44-equipped Dodge.

One of the most spectacular performances of the evening was put on by Curt Haisley driving the Off Constantly puller. With a distance of 341.96 feet, Curt had the only truck in the 340s and was 8 feet ahead of Second Place.

Remember the Wild Diesel truck we mentioned earlier? In a storybook finish, the truck that was shipped to Indiana just in time for the event recorded a class-winning 325.32-foot run.



BLOW OUT!

After launching like it had a rocket attached to it, Chase Lunsford's ultra-light 4x4 Dodge had a big boom at half track. When we saw the truck next, we found a massively split intercooler, which apparently was the reason behind all the noise.

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TOP TECH QUESTIONS

BY JASON SANDS

YOU'VE GOT QUESTIONS? WE'VE GOT ANSWERS!

Welcome to Top Tech Questions. One of our favorite forms of reader communication is tech questions. Our Top Tech section is a place where you ask what's on your mind, and we answer. Send us an email at **dieselpowertech@enthusiastnetwork.com** and ask away!

THREE QUESTIONS

Question: I have an '01 Dodge Ram with the NV5600 manual transmission and, due to worsening disabilities, I am interested in having an automatic transmission installed in place of the six-speed manual. I drove one with a four-speed auto and just can't abide with that, which is why I bought the six-speed in the first place. I was wondering about installing a 68RFE in place of the NV5600. Is this a viable swap? Has it been done and what would I need in the way of controls? I don't want to get a newer truck; I like my '01 a lot. It's mostly stock and will probably remain that way other than changes to the intake and exhaust. I run a Smarty on power setting 3 or economy mode, depending on what I'm doing. I'd like to put compound turbos on it as well, mostly for EGT control. I understand it would also probably increase my fuel economy. I'm not interested in maximum horsepower. Instead, my goal is usable torque for towing, and I prefer not to exceed about 2,400 rpm—and even that is more than I like. Gear spacing on the NV5600 pretty much mandates that I use it in Fifth to shift to Sixth while meeting the requirement of the owner's manual to not tow heavy loads below 1,600 rpm. Do you have any idea why they put that restriction on the operation of the truck?

Chris Baker
-via email

We've seen lots of transmission swaps in diesels, and we can tell you that if there's a will, there's a way. Check out this unique adapter (arrow) that's been used to mount a Dodge 47RH transmission to a 6.0L Power Stroke engine.

Answer: *Sounds like you have quite a few different things on your mind. We'll do our best to address them. First off, yes, an automatic transmission swap is possible, although we'd steer away from the 68RFE due to the cost, lack of power-handling capability, and lack of aftermarket controllers to run the transmission. Since you're not looking to bump up the power a bunch, an Allison 1000 five- or six-speed even in factory form would fit the bill nicely. They're cheaper than the 68RFEs, can handle more power, and a few different aftermarket controllers exist to run them. We'd contact a company like Destroked.com or PPE to get info on a controller, which should be used to run it behind your Cummins. Some trial and error will be needed to dial it in, although since the newer Allisons have an extra gear (or two in the case of the six-speed), we can assure you you'll almost always be in the right gear. Now, a word about cost. If you're the type of guy who can find a wrecked truck and do all the wiring yourself, this could be a cheap swap. If you're like most of us, you'll have to find a used core, get it rebuilt, and then find a computer to run it, which will cost around $7,000 to $10,000, depending on options.*

Yes, running twins will result in more boost at cruising engine speeds, theoretically leading to better usage of the fuel that's available at light loads and low rpm. This is the reason why we have seen mileage go up when running compound turbos, although a small, quick-spooling single turbo (like the one you already have) will be good when it comes to fuel economy as well. Also, when we say compounds can give a fuel economy advantage, we're talking more like 1 to 3 mpg, compared to the 5 to 10 mpg some people seem to think. If it were us, we'd stick with the stock turbo unless you want to add some extra power into the mix, and tow heavy and often.

Finally, diesel engines are designed like any other engine, to operate in a specific rpm range, and going too low or too high outside of that range can be detrimental. When revving an engine too high, problems such as valve float can occur. But trying to make power too low in the rpm band can result in blown head gaskets or broken turbochargers from excess cylinder pressure and compressor surge. Whenever towing, it's best to drop down a gear. Remember, Cummins marine engines were designed to operate all day long at 2,500 rpm, so you shouldn't be afraid to do the same with the engine in your truck.

MIRROR IMAGE OBS

Question: I have been following your articles on the '97 Ford F-350. You have also helped me in the past on the Power Stroke forums. I have the same truck and like everything you have done to yours. I already have a DP tuner and 3-inch downpipe to 4-inch exhaust. What mods would you recommend

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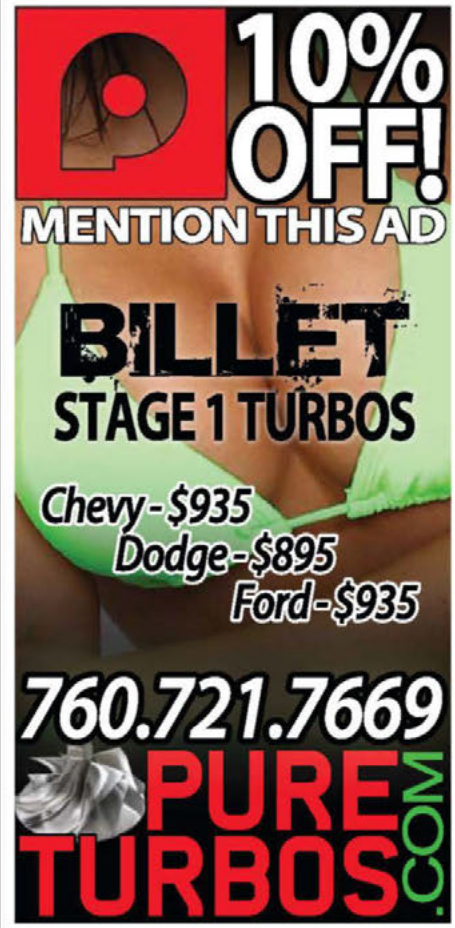

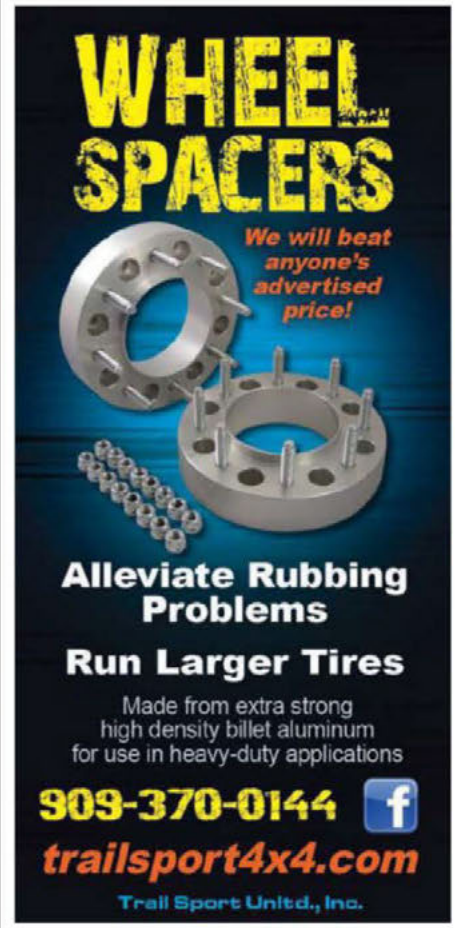

OBS Fords are getting more and more popular to modify, as being more than 20 years old officially makes them a classic among diesel trucks.

I start with to gain more power? Maybe a new turbo or new injectors? If you had to do it over again, is there anything you would change up? I have 210,000 miles on the engine, so I don't want to push it too hard just yet without having the money to go all out. Thanks for your time and input. I would be starting with about $1,500. Great work.

Dave Ladd
-via email

Answer: *The old "If you had to do it all over again..." scenario is perhaps one of the tougher questions to answer about one's own project truck. We posed this question to Mike McGlothlin a while back, and he indicated that although his 7.3L is a lot faster now than it used to be after its last round of modifications (which brought the horsepower total to 555), the truck was more fun to drive all around when the engine had the GTP38R and 238/80 injectors. It was nearly smokeless, and the small turbo spooled a lot quicker. It's not that the new setup is bad, it's just that you reach a certain point where tradeoffs must be made in the quest for speed.*

With OBS trucks being so severely fuel limited, one of the first things we'd spring for is a set of injectors. The size of the injectors will depend on the type of power you're looking to make, although something close to a 200cc injector with a 100-percent-over nozzle would be a good choice (especially if you're going to upgrade the turbo later). Remember, with larger injectors, you can always back down the fuel via tuning, whereas it's very hard to get a large turbo to act like a small one. After injectors, we'd start mirroring Mike's path on his truck and go as far as your wallet will allow.

I WANT IT ALL!

Question: I bought my first Cummins new in December 2011. It's a great truck, but I seem to have the itch to improve everything I own/buy to a certain extent. The only things I have managed to upgrade so far are a 4.5-inch suspension lift from Fabtech, Bilstein shocks, A-pillar gauges, a Reunel bumper, and I bought an H&S XRT Pro (though I have not installed the tuner yet). My plan is to get better fuel economy, more throttle response, and make the engine run like it should. My proposed upgrades are as follows: ARP head studs, S&B cold-air intake, FASS fuel system, install the tuner, MBRP exhaust, and H&S programming. I am also looking at possibly installing an AFE BladeRunner intake horn, and I have been thinking about doing a turbo swap. Which turbo would you recommend? I was leaning toward a Stainless Diesel second-gen manifold, BD turbo, and inline exhaust brake upgrade. Can you steer me in any other route and

The Dodge 68RFE transmissions require lots and lots of dollar signs to make them live, but we have seen some last in high-performance applications. We spotted this silver third-gen Ram at the Scheid Diesel Extravaganza making pass after eighth-mile pass in the 7.7-second range (11s in the quarter) with a built SunCoast 68RFE.

add or take away products that may not help me or be worth the money for what I'm trying to achieve? In the end, I want a reliable truck, a little more power, and no black smoke (or very little)—something I can jump into and drive without a worry.

Robb B.
-via email

Answer: *First of all, congratulations Robb on the purchase! The 6.7L Cummins engines are beasts, with awesome torque numbers and low-end response when you hop them up. We do have a few suggestions for you, though. First, you can't dismiss the transmission, as you've most likely purchased an automatic. If you do have the 68RFE transmission, then it's something you'll need to modify—even with only the mild power upgrades. H&S also offers Overdrive tuning, but we're starting to see the 68RFEs go south at about 150,000 miles or less, even at stock power. We'd skip all the turbo, manifold, and brake stuff for now and start saving for a new transmission. Stock transmissions are upward of $4,500 from Ram, and modified versions can be more than $7,000. While we have seen some of the built 68RFEs handle more than 700 rwhp, they're not cheap. If you have a manual transmission, then you lucked out, because all you'll need is an upgraded clutch, provided you don't abuse it. Another bit of advice concerns head studs. We've seen more than one 6.7L engine blow a head gasket, even with studs, if it's used very hard. We'd recommend going with the ARP 625 head studs for your 6.7L, as they have a much greater clamping force than the basic ARPs. They cost twice as much, but it's not a job you'd want to do twice.*

Once your engine has good studs and the truck is outfitted with a stout transmission, we'd say it's OK to drop the cash for a turbo, tuning, and exhaust brake. Billet 64.5mm turbos (a variety of companies make them) are good, responsive turbos that can make as much power as your stock injectors and CP3 will support. With going to a larger turbo, it's also advantageous to have a custom tune created that will kill some of the low-end fueling and smoke. We've had good luck with Hardway Performance for this type of tune.

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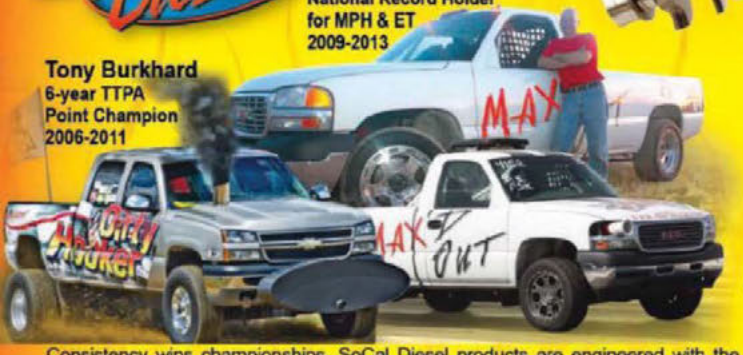

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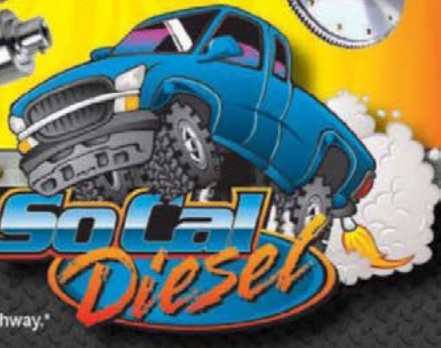

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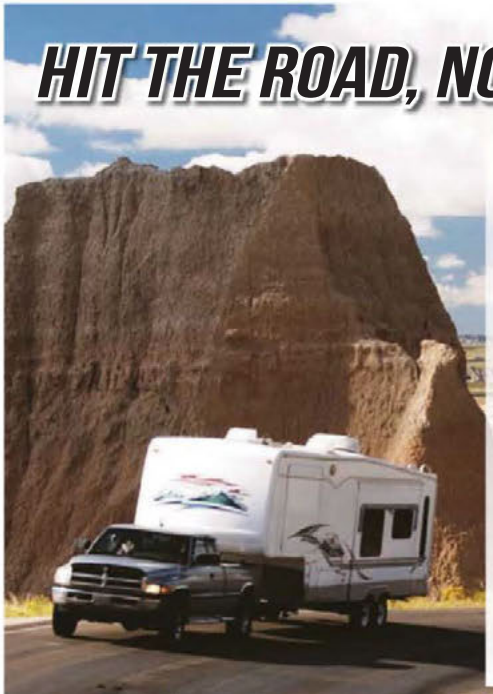

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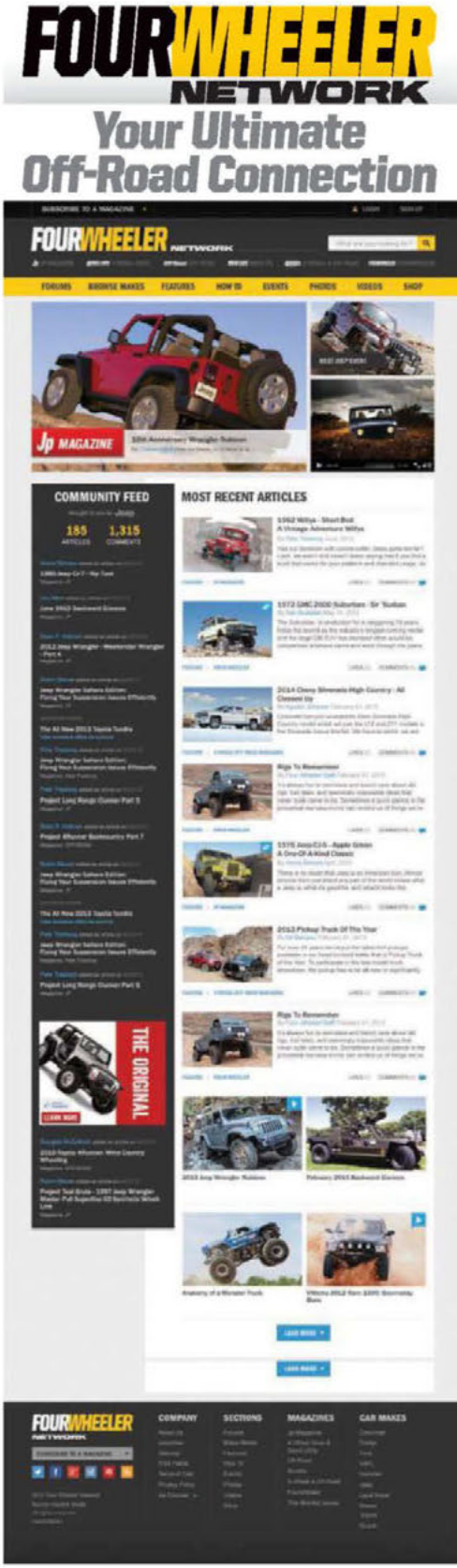

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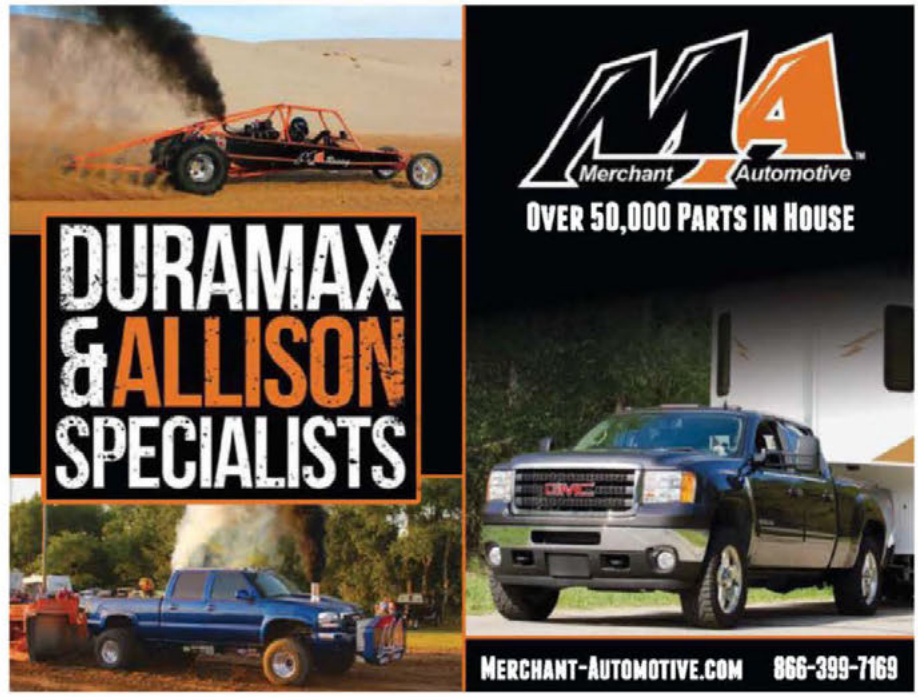

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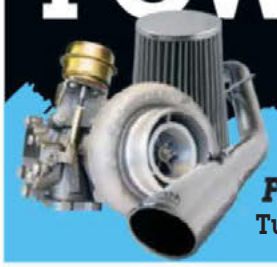

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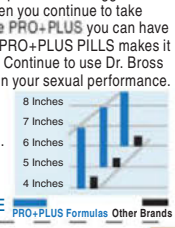

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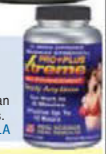

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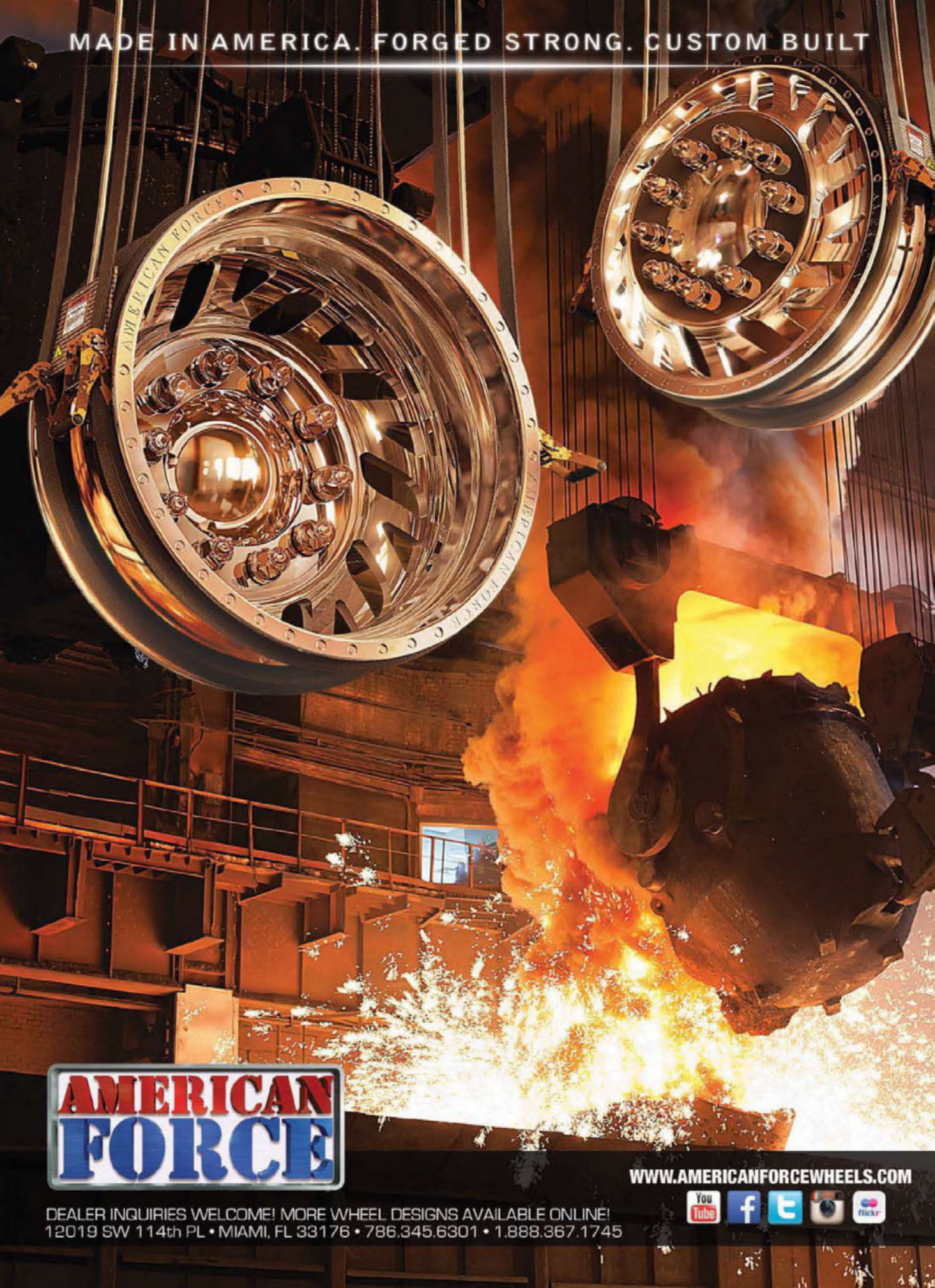
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